



Dart Hawkesbury
1270 Aberdeen St Hawkesbury, ON K6A 1K7 Canada
Tel (613) 632-5200

Purchasing Receipts

PO No	Supplier	Line Item No	Rel No	Terms	Purchased Item	Description	For Part No	Project	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Container No	Status	Receive Date	Price/Unit	Aging Past Days	Total	Supplier Name
PO040374	ACI001-VC	1	✓	1 Net 30	M6061T6B81.500X01.250	6061-T6 Bar 1.00 X 1.25 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft				20	7/16/2018	20		S092911	Stock	7/16/2018	\$ 2.64 / ft	2	\$52.74	Acier Ouellette Inc.
		2	✓		M6061T6B81.000X12.000	6061-T6 Bar 1.00 X 12.00 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft				12		12		S092912	Stock	7/16/2018	\$ 57.27 / ft	2	\$687.29	Acier Ouellette Inc.
		3	✓		M6061T6B81.250X4.500	6061-T6 Bar 1.25 X 4.50 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft				8		8		S092913	Stock	7/16/2018	\$ 43.86 / ft	2	\$350.85	Acier Ouellette Inc.
		4	✓		M6061T6B81.500X3.000	6061-T6 Bar 1.500 X 3.000 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft				6		6		S092914	Stock	7/16/2018	\$ 18.31 / ft	2	\$109.85	Acier Ouellette Inc.
		5	✓		M1018R1.375	M1018R1.375 : MATERIAL: AISI 1018-1025 ROUND BAR M1010S20GA AS PER MIL-S-7097 OR ASTM A108 receive ft				15		15		S092915	Stock	7/16/2018	\$ 6.06 / ft	2	\$90.86	Acier Ouellette Inc.

PO No	Supplier	Line Item No	Rel No	Terms	Purchased Item	Description	For Part No	Project	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Container No	Status	Receive Date	Price/Unit	Aging Days	Past Due	Total	Supplier Name
		6			M1018B1 000X03.000	1010-1025 Steel Bar 1,000 X 3,000 : MATERIAL: AISI 1010- 1025 OR ASTM A36/A366/A569/A570 OR OR CSA G40-21 38W/44W/50W/60W/70W CSA G40-21 OR 38W/44W/50W/60W/70W				12		12		S092916	Stock	7/16/2018	\$ 12.24 / ft	2		\$146.82	Acier Ouellette Inc.
		8			M5052H32S.125	5052-H32 .125 Sheet MATERIAL: 6061- T6/T62/T651 ALUMINUM SHEET OR PLATE SPECIFICATION: QQ-A- 250/11 OR AMS-QQ-A- 250/11 OR AMS 4025 OR 4027 OR ASTM B209				32		32		S092917	Stock	7/16/2018	\$ 8.21 / sf	2		\$262.72	Acier Ouellette Inc.
		9			MT-4140QT-R0.750	AISI 4140 Quenched &Tempered Steel Round Bar 0.750" Dia. : AISI 4140 Q&T Round Bar : MATL: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT				20		15		S093067	Stock	7/16/2018	\$ 3.09 / ft	2		\$46.40	Acier Ouellette Inc.
		10			MT-4140QT-R1.000	AISI 4140 Quenched &Tempered Steel Round Bar 1.000" Dia. : AISI 4140 Q&T Round Bar : MATL: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT				15		20		S093068	Stock	7/16/2018	\$ 5.03 / ft	2		\$100.63	Acier Ouellette Inc.
		11			MT-4140QT-R2.250	AISI 4140 Q&T Round Bar : MATL: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT				10		10		S092919	Stock	7/16/2018	\$ 25.64 / ft	2		\$256.40	Acier Ouellette Inc.
		12			MT-4140QT-R4.000	AISI 4140 Quenched &Tempered Steel Round Bar 4.000" Dia. : AISI 4140 Q&T Round Bar : MATL: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT				3		3		S092920	Stock	7/16/2018	\$ 85.28 / ft	2		\$255.84	Acier Ouellette Inc.
		13			MT-HRS-P-0.3125	Hot Rolled Steel Plate 0.3125" (44W) MATERIAL: HOT ROLLED STEEL PLATE ASTM A36 OR ASTM A1011 OR 44W OR ASTM A1018				16		16		S092921	Stock	7/16/2018	\$ 11.60 / sf	2		\$185.54	Acier Ouellette Inc.

PO No	Supplier	Line Item No	Rel No	Terms	Purchased Item	Description	For Part No	Project	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Container No	Status	Receive Date	Price/Unit	Aging Days	Past Due	Total	Supplier Name
		14			M6061T6R1.375	6061-T6 Round Bar 1.375" MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR AS PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117 4128/4115/4116 OR QQ- AA-200/8 OR AMS-QQ-A- 200/8 OR AMS 4160 OR ASTM B221 OR ASTM B221 receive ft				15		15		S092922	Stock	7/16/2018	\$ 6.03 / ft	2		\$90.50	Acier Ouellette Inc.
Total:										184		184								\$1,991.16	

Plex 7/18/2018 9:10 AM dart.Tollis.Andrew

BON DE LIVRAISON

NO DU BON	113476	DATE DE LIVRAISON	20/Jul/16
NIR:	R-015478-2	NO DE TELEPHONE DU CLIENT:	450-963-3693
NO COMMANDE CLIENT:	OU-46072	REPRESENTANT:	Guillaume Morin
CHAUFFEUR:	JP COMEAU	NO COMMANDE:	99115

ACIERS TRANSBEC (1997) LTEE 4054, BOUL LE CORBUSIER #201 LAVAL, QC H7L 5R2 NO CLIENT: 3693		ACIER OUELLETTE 22, BOUL J-F KENNEDY ST-JEROME, QC J7Y 4B6 NO CLIENT: L-3693-3	
NO DE FILIERE	NO PIECE CLIENT	DESCRIPTION ALLIAGE / TREMPAGE	LONGUEUR
SA00123		PLAT 1.250 X .500 6061/T6	6096mm
		FINITION	
		NATUREL MILL	
		COMMANDE CLIENT NB PIECES	75
		NO PIECES	500

3 MILL TEST + CERT. CONFORMITE

Mill Test (Tensile Properties of Aluminum)

Test Date: 14/Jul/16

Order No.	Alloy	Temper	Yield (ksi)	Ultimate Tensile (ksi)	Total Elongation (%)	Hardness (Rockwell E)	Conductivity %	Report No.
99115-1-1A1	6061	T6	37.6	41.4	21.10	92.00		5647

Certificate of compliance (Certificat de conformité)

Normes: (ANSI H35.1-1997) & (ASTM B221)

Order No. Hardness (Webster) #1 Alloy #2 Cast No. CAST CHEMICAL COMPOSITION:

Order No.	Hardness (Webster) #1	Alloy #2	Cast No.	CAST CHEMICAL COMPOSITION:
99115-1-1A1	15	15	33297	

Al	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	B	Zr	Bi	Pb	Sn	Sr	Co
97.96	0.57	0.24	0.20	0.08	0.85	0.06	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VÉRIFICATION DE MATÉRIEL

DATE: 20/07/16

VÉRIFIÉ PAR: [Signature]

SIGNATURE

SIGNATURE
CLIENT:

DATE:

5



Order - Customer

CO00098703

ACIER OUELLETTE INC.
935, Boul. du Havre
Salaberry de Valleyfield (Québec) J6S 5L1
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Billed to

DART AEROSPACE LTD

1270, ABERDEEN ST.
HAWKESBURY, Ontario, K6A 1K7

F-M

Shipped to

, Ontario,

Att: CHANTAL LAVOIE Tél.: 613-632-5200

Delivery Route 5

Customer N° CL10001056
Date 2018/07/05
Delivery date 2018/07/13
Your order N° 040374
Processed by Eric Kaehlert
Salesman
Carrier OUELLETTE VALLEYFIELD
Credit Terme Net 30 Days

Product Description	Weight	Qty	UM	PCS NB			Internal Use Only		
				CMD	EXP	B/O	IN	I	S C
1 FLAT ALU 1/2 X 1 1/4 6061-T6 * FAL-12114 1 X 20' ** CERTIFICATE ** LINE#1 <i>Heat 33297</i>	15.70	20.00	PI_\$CLB	0.00					
2 FLAT ALU 1 X 12 6061-T6 * FAL-112 SAW CUT 1 X 12' ** CERTIFICATE ** LINE#2 <i>Heat 6001M170313A</i>	169.34	12.00	PI_\$CLB	0.00					
3 ALU PLATE 1 1/4 6061-T651 RANDOM PAL-1146061-V SAW CUT 1 PC 4-1/2" X 8' ** CERTIFICATE ** LINE#3 <i>Heat: 837116567</i>	53.88	3.00	PI2_\$CLB	0.00					
4 FLAT ALU 1 1/2 X 3 6061-T6 * FAL-1123 1 X 6' ** CERTIFICATE ** LINE#4 <i>Heat 84E180264</i>	31.75	6.00	PI_\$CLB	0.00					
5 ROUND CR 1 3/8 1018 (R) RCR-138 1 X 15' ** CERTIFICATE ** LINE#5 <i>Heat 138426</i>	75.75	15.00	PI_\$CLB	0.00					



Order - Customer

CO00098703

Product Description		Weight	Qty	UM	PCS NB			Internal Use Only			
					CMD	EXP	B/O	IN	I	S	C
6 FLAT CR 1 X 3 1018 (R) FCR-13 1 X 12' R/L ** CERTIFICATE ** LINE# 6	2727 <i>heat: 171456</i>	122.40	12.00	PI1_\$CLB	0.00						
7 ALU SHEET 1/8 5052-H32 RANDOM FEAL-18-V5052 1 X 4' X 8' PVC 1 SIDE ** CERTIFICATE ** LINE# 8	4262 <i>heat: 7101 7051 61-4</i>	56.38	32.00	PI2_\$CLB	0.00						
8 ROUND 4140 HEAT TREAT 3/4 (R) R4140-34H 1 X 20' R/L ** CERTIFICATE ** LINE# 9	4949 <i>heat: 153574</i>	30.04	20.00	PI1_\$CLB	0.00						
9 ROUND 4140 HEAT TREAT 1 (R) R4140-1H SAW CUT 1 X 15' ** CERTIFICATE ** LINE# 10	4919 <i>heat: 177569</i>	40.05	15.00 1.00	PI1_\$CLB UN	0.00						
10 ROUND 4140 HEAT TREAT 2 1/4 (R) R4140-214H SAW CUT 1 X 10' ** CERTIFICATE ** LINE# 11	4927 <i>heat: 177569</i>	135.20	10.00	PI1_\$CLB	0.00						
11 TRANSIT ST-JEROME 09-07 ** R4140-4H SAW CUT 1 X 3' ** CERTIFICATE ** LINE# 12	4965 <i>heat: 1774907</i>	132.21	3.00	PI1_\$CLB	0.00						
12 PLATE 44W 5/16 RANDOM P44-516-V	4124 <i>heat: 1280470</i>	204.00	16.00	PI2_\$CLB	0.00						



Order - Customer

CO00098703

Product Description	Weight	Qty	UM	PCS NB			Internal Use Only						
				CMD	EXP	B/O	IN	I	S	C	OUT		
COUPE AU FEU 1 X 4' X 4' ** CERTIFICATE ** LINE# 13		204.00	LBS_\$CLB										
** TRANSIT ST-JEROME 11-07 **													
13 ROUND ALU 1 3/8 6061-T6 * RAL-138 1 X 15' ** CERTIFICATE ** LINE# 14	26.16 5132	15.00	PL_\$CLB	0.00									
Total Weight (LBS) : 1 092.86													
NIR : R-109516-6													
Conditions : All sold and delivered materials remain the property of "Acier Ouellette Inc." until payment is made in full, complete and cashed. All test materials are at the buyer's expense. The warranty offered by "Acier Ouellette Inc." is the same as offered and honored by the manufacturer and his warranty is transferred by "Acier Ouellette Inc." to the client. The buyer hereby accepts to respect the following conditions: Net 30 days from billing date and the buyer accepts to pay administration charges of 2% per month (24% per annum) on all past due amounts over 30 days. Any default in respect with this contract will lead to payment by acceleration and permits to the seller, at his choice to claim for the balance due or the repossession of the goods sold. All claims must be made within five (5) days with this document enclosed. Any merchandise that has been damaged, cut or modified cannot be returned. All goods returned must be with our authorization and are subject to a 25% restocking charge.													
Prepared By :	Verified By :	Delivered By :	Time	Customer's Signature				Y	M	D	I		
HST Total (\$CAD) 341.99 Deposit 2 972.69 Balance 0.00 2 972.69													



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO040374**

Supplier: ACI001-VC
Acier Ouellette Inc.
935 Boul. Du Havre
Valleyfield
QC
J6S 5L1 Canada
Phone: 800 667 4248
Fax: 450 377 5696

PO No: PO040374

PO Date: 6/29/18

Due Date: 7/11/18

Purchase Order

Revision:

Revision Date:

Ship-To Contact: Phone:

Via: Ground

Pymt Terms: Net 30

Freight Terms:

Special Comments: QUOTE NO. sou0117139

E-MAILED
JUL 05 2018

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Items

Line Item	Job	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1		M6061T6B0.500X01.250		6061-T6 Bar .500 X 1.25 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft	Firmed	7/11/18	20 ft	0 ft	20 ft	\$2.637/ft	\$52.74
2		M6061T6B1.000X12.000		6061-T6 Bar 1.00 X 12.00 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft	Firmed	7/11/18	12 ft	0 ft	12 ft	\$57.274166/ft	\$687.29
3		M6061T6B1.250X04.500		6061-T6 Bar 1.25 X 4.50 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft	Firmed	7/11/18	8 ft	0 ft	8 ft	\$43.85625/ft	\$350.85

Items											
Line Item	Job	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
4		M6061T6B1.500X3.000		6061T6 Bar 1.500 X 3.000 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft	Firmed	7/11/18	6 ft	0 ft	6 ft	\$18.308333/ft	\$109.85
5		M1018R1.375		M1018R1.375 : MATERIAL: AISI 1018-1025 ROUND BAR M1010S20GA AS PER MIL-S-7097 OR ASTM A108 receive ft	Firmed	7/11/18	15 ft	0 ft	15 ft	\$6.0573333/ft	\$90.86
6		M1018B1.000X03.000		1010-1025 Steel Bar 1.000 X 3.000 : MATERIAL: AISI 1010-1025 OR ASTM A36/A366/A569/A570 OR OR CSA G40-21 38W/44W/50W/60W/70W CSA G40-21 OR 38W/44W/50W/60W/70W	Firmed	7/11/18	12 ft	0 ft	12 ft	\$12.235/ft	\$146.82
7		MT-1144-R4.500		1144 Steel Proof Round Bar 4.500"	Firmed	7/18/18	8 ft	0 ft	8 ft	\$15.210833/ft	\$121.69
8		M5052H32S.125		5052-H32 .125 Sheet MATERIAL: 6061-T6/T62/T651 ALUMINUM SHEET OR PLATE SPECIFICATION: QQ-A-250/11 OR AMS-QQ-A-250/11 OR AMS 4025 OR 4027 OR ASTM B209	Firmed	7/11/18	32 sf	0 sf	32 sf	\$8.21/sf	\$262.72
9		MT-4140QT-R0.750		AISI 4140 Quenched & Tempered Steel Round Bar 0.750" Dia. : AISI 4140 Q&T Round Bar : MAT'L: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT	Firmed	7/11/18	20 ft	0 ft	20 ft	\$3.0935/ft	\$61.87
10		MT-4140QT-R1.000		AISI 4140 Quenched & Tempered Steel Round Bar 1.000" Dia. : AISI 4140 Q&T Round Bar : MAT'L: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT	Firmed	7/11/18	15 ft	0 ft	15 ft	\$5.031333/ft	\$75.47

Items											
Line Item	Job	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
11		MT-4140QT-R2.250		AISI 4140 Q&T Round Bar : MAT'L: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT	Firmed	7/11/18	10 ft	0 ft	10 ft	\$25.64/ft	\$256.40
12		MT-4140QT-R4.000		AISI 4140 Quenched & Tempered Steel Round Bar 4.000" Dia. : AISI 4140 Q&T Round Bar : MAT'L: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT	Firmed	7/11/18	3 ft	0 ft	3 ft	\$85.28/ft	\$255.84
13		MT-HRS-P-0.3125		Hot Rolled Steel Plate 0.3125" (44W) MATERIAL: HOT ROLLED STEEL PLATE ASTM A36 OR ASTM A1011 OR 44W OR ASTM A1018	Firmed	7/11/18	16 sf	0 sf	16 sf	\$11.59625/sf	\$185.54
Line Item Note 1 pcs 4 ft x 4 ft											
14		M6061T6R1.375		6061-T6 Round Bar 1.375" : MATERIAL: 6061- T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR AS PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117 4128/4115/4116 OR QQ- AA-200/8 OR AMS-QQ-A- 200/8 OR AMS 4160 OR ASTM B221 OR ASTM B221 receive ft	Firmed	7/11/18	15 ft	0 ft	15 ft	\$6.033333/ft	\$90.50
15		MT-4140-B-1.000X1.000		4140 Steel Bar 1.000 X 1.000 : AISI 4140N STEEL BAR PER MIL-S-5626, AMS 6382, AMS 6349, AMS 6529 receive ft	Firmed	7/19/18	24 ft	0 ft	24 ft	\$20.495833/ft	\$491.90
16		MT-4140-S-1.500X2.000		4140 Steel Bar 1.500 X 2.000 : MAT'L: AISI 4140 / 4142 STEEL SHEET OR PLATE MINIMUM ROCKWELL C = 28 Rc MAXIMUM ROCKWELL C = 32 Rc ASTM A829, AMS 6395 receive ft	Firmed	7/19/18	6 ft	0 ft	6 ft	\$42.50/ft	\$255.00
Grand Total:										\$3,495.34	

Order Notes

Plex 7/4/18 2:12 PM dart.lavoie.chanta

Order Notes

Procurement Quality Clauses

A005 right of entry

A012 chemical and physical test report

A016 personnel qualification

A017 raw material identification (as applicable)

A026 certification of material conformance

A041 quality management system

A042 dart notification by supplier

A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 7/4/18 2:12 PM dart.lavoie.chantal

SPECIFICATION CONTROL DRAWING

B

PURCHASE MATERIAL: 6061-T6/76510/76511/T62 ALUMINUM BAR
 SPECIFICATION: QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4177/4128/415/416)
 OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
 OR ASTM B211 OR ASTM B221

PART NUMBER:

M6061T6B | T TTT | X | WW WWW/
 THICK | WIDTH

WHERE "T TTT" = THICKNESS IN INCHES
 "WW.WWW" = WIDTH IN INCHES
 E.G. 1.0" X 12.0" BAR = M6061T6B1.000X12.000

RELEASED
 2009-09-03
 1172

REV	DESCRIPTION	DATE
A	REMOVE QQ-A-290/11 OPTION REFORMA1 NOTES, ADD ASTM B211/B221 (2N D7-1)	09.07.13
DESIGN	DS	01.08.08
DRAWN	DS	
CHECKED	DS	
MFG. APPR.	DS	
APPROVED	DS	
DE APPR.	DS	
DATE	09.07.13	

TITLE	DART AEROSPACE LTD
DRAWING NO	M6061T6B
REV. B	
SHEET 1 OF 1	
SCALE	NTS
DATE	09.07.13

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: <u>M606176B0.500x0.250</u>	DATE: <u>18/6/18</u>
MATERIAL CERT REC'D: <u>1/5</u>	QUANTITY RECEIVED: <u>20'</u>
QUANTITY INSPECTED: <u>20'</u>	QUANTITY REJECTED: <u>0</u>
SHEET SIZE ORDERED: <u>0.500"</u>	
SHEET SIZE RECEIVED: <u>0.500"</u>	
THICKNESS ORDERED: <u>0.500"</u>	
THICKNESS RECEIVED: <u>0.500"</u>	
PO / BATCH NO.: <u>P0040374/5892911</u>	

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/>	
CORRECT FINISH	<input checked="" type="checkbox"/>	
CORROSION	<input checked="" type="checkbox"/>	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/>	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/>	<u>ASTM A221</u>
CORRECT THICKNESS	<input checked="" type="checkbox"/>	
PHOTO REQUIRED	<input checked="" type="checkbox"/>	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/>	<u>H7.33297</u>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/>	
CORRECT # ON THE MATERIAL	<input checked="" type="checkbox"/>	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/>	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/>	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK.				
RECORD RESULTS BELOW				
HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL				
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

Testers located in the Quality Office

QC 18 INSPECTION	
ENGINEERING SIGNOFF (if required)	
INSPECTED BY: <u>AT</u>	DATE: <u>18/6/18</u>
SIGNED OFF BY:	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

2450

FAL-112

48896

10465



Service Center Metals

5850 Quality Way
Prince George, VA 23875

CERTIFIED INSPECTION REPORT AND TEST RESULTS FOR EXTRUDED PRODUCTS



Can Do.

Quantity Certified	2,032 lbs	12 pcs	MANIFEST NUMBER	327862	DIE NUMBER	PL0741	DATE OF SHIPMENT	3/30/2017
			CUSTOMER PO	C74189	ALLOY / TEMPER	6061-T6511	SALESPERSON	D. Schroeder (Canada)
			CUSTOMER PART NUMBER	V832661-PL0741	DESCRIPTION	PL 1,000 x 12,000		

OUR ORDER NUMBER	ITEM
289111	11

CERTIFICATION
ASTM-B221-14 No Stencil
SPECIFICATION
AMS-QQA-200/8 Rev-A

We hereby certify that the material covered by this report has been inspected in accordance with the most recent certification revision, and has been found to meet the applicable requirements described herein, including any specifications forming a part of the description, and that samples representative of the material met the composition limits and had the mechanical properties shown. This product is RoHS-2, REACH, and DFARS compliant.

Mechanical Properties

Tests	Lot No.	Test Date	Ultimate Tensile Strength (KSI)	Yield Strength (KSI)	Percent Elongation
1	201704837	3/30/17	min 50.40 max 50.40	min 46.50 max 46.50	min 16.60 max 16.60

Chemical Composition for Aluminum Alloy 6061

Cast #	Lot No.	Alloy	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Al	Others	Melt Source:
001M170313A	201704837	6061	0.75	0.38	0.33	0.10	0.89	0.10	0.07	0.03	97.36	Each Total	United States of America

SCM products are melted and extruded in the USA

Calvin J. Wiggins, Director of Quality & Technical Services

Rev 8/9/16

Print Date: 3/30/2017

RELEASED
2009-05-03
APD

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>AT</u>	SIGNED OFF BY: _____
DATE: <u>18/07/18</u>	DATE: _____

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK.				
RECORD RESULTS BELOW				
TYPE OF MATERIAL	HRC	HRB	DUR A	DUR D
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

Testers located in the Quality Office

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/> Y	
CORRECT FINISH	<input checked="" type="checkbox"/> Y	
CORROSION	<input checked="" type="checkbox"/> Y	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> Y	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/> Y	<u>AMS-QA-A-2008</u>
CORRECT THICKNESS	<input checked="" type="checkbox"/> Y	
PHOTO REQUIRED	<input checked="" type="checkbox"/> Y	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> Y	
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> Y	<u>LT-001M170313A</u>
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> Y	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/> Y	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/> Y	

MATERIAL: <u>M6061 T6 B1.000 x 12.000</u>	DATE: <u>18/07/18</u>
MATERIAL CERT REC'D: <u>Yes</u>	QUANTITY RECEIVED: <u>12#</u>
	QUANTITY INSPECTED: <u>12#</u>
	QUANTITY REJECTED: <u>0</u>
THICKNESS ORDERED: <u>1.000"</u>	THICKNESS RECEIVED: <u>1.000"</u>
SHEET SIZE ORDERED: <u>—</u>	SHEET SIZE RECEIVED: <u>—</u>
PO / BATCH NO.: <u>80040374/5092911</u>	

MATERIAL RECEIPT INSPECTION FORM

5021b

hee

CONTRACT/ORDER : 2224
BILL OF DELIVERY : 00348517
TRUCK/CONTAINER : MSCU 5764780

LOT/DIMENSIONS (mm): 70190093

TEMPER: 1851

1 MPa = 1 N/mm² = 0.145 ksi = 0.102 kgf/mm²

591437;592325	8.783,224	46.2	46.9	39.4	14.5	14.5
---------------	-----------	------	------	------	------	------

ACCORDING TO ASTM D2028-2014, AMS 4027N-2005, ANSI H35.2-2015, ASME SB208-2015, AMS-QQ-A-52071-1-1987 we hereby certify that the material detailed herein has been produced and tested according to the requirements of the relevant standards, specification and/or order. Keep in dry container, without exposure to temperatures variations. The differences between metal and air must not exceed 11 °C. Please follow the recommendations of the Aluminum Association given for minimizing water, chemical action, for the unloading and storage of the material in your premises before usage. Also we certify that ALPO product complies with REACH legislation no. 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals and CLP legislation no. 1272/2008 on classification, labelling and packaging of substances and mixtures.

EN 10204-2004 3.1 according to

QUALITY CONTROL DEPT.
Marlux Oliganil, Eng

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: 6061-T6/T62/T651 ALUMINUM SHEET OR PLATE

SPECIFICATION: QQ-A-250/11 OR AMS-QQ-A-250/11
OR AMS 4025 OR 4027
OR ASTM B209

PART NUMBER: M6061T6S XXX X W.WWW
THK WIDTH

WHERE "XXX" = THICKNESS (IN INCHES)
AND "W.WWW" = WIDTH (IN INCHES, OPTIONAL, FOR SPECIFYING CUT PLATE)

EG. 0.063" THICK SHEET = M6061T6S.063
EG. 3.5" WIDE BY 0.500" THICK PLATE = M6061T6S.500X3.500
PREFERRED SIZE: .XXX BY 4FT BY 8FT FOR SHEET

RELEASED
2018 MAR 13
EJ 18-666

APPROVED

C	ADD PLATE AND T651 SPEC	ML	17.12.13
B	REFORMAT DNG, ADD B209 SPEC (ZN DB-1), REF PAR 08-020A	CP	09.07.13
A	NEW ISSUE	RF	01.06.08
REV.	DESCRIPTION	BY	DATE
DESIGN	DS		
DRAWN	ML		
CHECKED	NO		
MFG. APPR.	JFS		
APPROVED	HS		
DE APPR.	CP		
DATE	17.12.13		
DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA			
DRAWING NO. M6061T6S			
TITLE 6061-T6 SHEET/PLATE SPEC			
REV. C			
SHEET 1 OF 1			
SCALE NTS			
COPYRIGHT © 2001 BY DART AEROSPACE LTD ALL RIGHTS RESERVED. NO PART OF THIS DRAWING IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT PERMISSION FROM DART AEROSPACE LTD.			

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061T651. 250x04.500 (M6061T651. 250x04.500)
 DATE: 18/07/18
 QUANTITY RECEIVED: 84
 QUANTITY INSPECTED: 84
 QUANTITY REJECTED: 0
 THICKNESS ORDERED: 1.25"
 THICKNESS RECEIVED: 1.25"
 SHEET SIZE ORDERED: —
 SHEET SIZE RECEIVED: —
 PO / BATCH NO.: P0040374 / 5092913

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/>	
CORRECT FINISH	<input checked="" type="checkbox"/>	
CORROSION	<input checked="" type="checkbox"/>	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/>	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/>	AMS-QQ-A-250/11
CORRECT THICKNESS	<input checked="" type="checkbox"/>	
PHOTO REQUIRED	<input checked="" type="checkbox"/>	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/>	
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/>	MT=537116567
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/>	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/>	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/>	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK.
RECORD RESULTS BELOW
HRC
HRB
DUR A
DUR D
WEBSTER

Testers located in the Quality Office

QC 18 INSPECTION
 ENGINEERING SIGNOFF (if required)
 INSPECTED BY: AT
 DATE: 18/07/18
 SIGNED OFF BY: _____
 DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

2445

FAI-1123

51350

7NA 2347



GVA

GLOBAL VIETNAM ALUMINIUM COMPANY LIMITED

Address: MY XUAN BI-CONAC INDUSTRIAL ZONE, MY XUAN TOWN, TAN THUANH DISTRICT,
BA RIA VUNG TAU PROVINCE, VIET NAM
Tel: +84(0)643924954
Fax: +84(0)643924953

MILL TEST CERTIFICATE

Date: April 26th, 2018

PO number: P-18057
Shipping Ref No.: 18-0817
I.C No.: DC HMN811301
Date of Issue: April 10, 2018
Item Code: 1931000
Die Number: D00141
Alloy & Temper: 6061-T6
Production Description: ALUMINIUM EXTRUDED PROFILES
Flat Bar 1.5" x 3" x 240" 6061-T6 D00141
Length (inch): 240
Bundle number: P-18057-008, P-18057-007
Heat Number: SXE180264
Date: 01/03/2018
Applicable Specifications: ASTM B221 STANDARDS
CHEMICAL ANALYSIS: %

Si	Mg	Fe	Cu	Mn	Cr	Zn	Ti	Al	Other	TOTAL	Remark:
0.598	0.900	0.211	0.251	0.016	0.096	0.033	0.019	98.282	<0.05	<0.10	26/02/2018

MECHANICAL ANALYSIS:

Ult. Strength (ksi)	Yield Strength (ksi)	Elongation % L.N 2"	Remark:
38.6	35.3	10.5	26/02/2018

All profiles, showing material shipped match aluminum alloy as per standard, with chemical analysis to match aluminum alloy standard.
We hereby certify that the item listed have been checked and tested in accordance with the specifications noted and have been found to meet all the applicable requirements. Certifications are kept on file for 36 months from the date of purchase and are available for review upon request, referring to ASTM and the PO number.

Quality Manager



TRUNG TÂM KIỂM NGHIỆM CÔNG TY
THÀNH NHÓM TUYÊN CẦU VIỆT NAM
GLOBAL VIETNAM ALUMINIUM
CO., LTD TESTING CENTER

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: 6061-T6/1651/176510/1762 ALUMINUM BAR

SPECIFICATION:

QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/415/416)
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
OR ASTM B211 OR ASTM B221

PART NUMBER:

M6061T6B T TTT X WW WWW
THICK WIDTH


WHERE "T TTT" = THICKNESS IN INCHES
"WW WWW" = WIDTH IN INCHES

E.G. 1.0" X 12.0" BAR = M6061T6B1 000X12.000

REV	DESCRIPTION	BY	DATE
B	REMOVE QQ-A-225/8 OPTION, REFORMAT NOTES, ADD ASTM B211B221 (2N D7-1)	DS	09.07.13
A	NEW ISSUE	DS	01.06.09
DESIGN	DS		
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	09.07.13		
DRAWING NO.		REV. B	
M6061T6B		SHEET 1 OF 1	
TITLE		SCALE	
6061-T6 BAR		NTS	
COPYRIGHT © 2009 BY DART AEROSPACE LTD.			

RELEASED
2009-05-03
MAD

H:\FORMS\Quality Assurance\approved QA\MRIF Material Receipt Inspection Form revD

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: 	SIGNED OFF BY: _____
DATE: 18/2/18	DATE: _____

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK.				
RECORD RESULTS BELOW				
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D
	WEBSTER			

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y	
CORRECT FINISH	Y	
CORROSION	Y	
CORRECT GRAIN DIRECTION	Y	
CORRECT MATERIAL PER M-DRAWING	Y	ASTM B221
CORRECT THICKNESS	Y	
PHOTO REQUIRED	Y	
CORRECT REF # TO LINK CERT	Y	MT: 5X6180264
CORRECT MATERIAL IDENTIFICATION	Y	
CORRECT # ON THE MATERIAL	Y	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	

MATERIAL:	M6061 T681.500x3.000
DATE:	18/07/18
MATERIAL CERT REC'D:	<i>[Signature]</i>
QUANTITY RECEIVED:	6'
QUANTITY INSPECTED:	6'
QUANTITY REJECTED:	0
THICKNESS ORDERED:	1.500
THICKNESS RECEIVED:	1.500
SHEET SIZE ORDERED:	—
SHEET SIZE RECEIVED:	—
PO / BATCH NO.:	10040374/5092914



ALVARA Y LUPARDO, 2
48490 UGAO-MIRAVALLS/VIZCAYA (SPAIN)
Tfno.: 946480211
Fax: 946480128
Email: calibrados@calibradospradera.es
www.calibradospradera.es

CERTIFICADO DE CALIDAD/QUALITY REPORT

De acuerdo a / Made according to:

EN 10204/DIN 58049

3.1

Nº CERTIFICADO / CERTIFICATE NR.: 46814

ALBARAN	46814
Delivery Note Nr.	
CLIENTE	LES ACIERS TRANSBEC (1997) LTÉE
CUSTOMER	

Productos Calibrados de acero. Condiciones técnicas de suministro.

Bright steel products. Technical delivery conditions.

PRODUCTO SOLICITADO / PRODUCT ACCORDING ASTM A108

Nº PRIMO	DESCRIPCION	RES	TOPER/ANEX	VALOR	VALOR
OC-47016	RED. TORNEADO 88,90 (3/12)	1.206	-0.102	137513	88,90
VT-46700	RED. ESTIRADO 34,93 (3/8)	1.044	-0.051	137992	34,93
MFP-47224	RED. ESTIRADO 38,10 (1/2)	1.018	-0.102	137999	74,61
PAR-47152	RED. ESTIRADO 49,21 (15/16)	1.048	-0.051	138232	38,10
CA-46388	RED. ESTIRADO 38,10 (1/2)	1.078	-0.076	138734	49,21
CA-46391	RED. ESTIRADO 34,93 (3/8)	1.050	-0.051	138324	38,10
PAR-47472	RED. ESTIRADO 38,10 (1/2)	996	-0.051	138426	34,93
PAR-47472	RED. TORNEADO 87,31 (3/16)	1.046	-0.051	138488	38,10
PAJ-47284	RED. ESTIRADO 38,10 (1/2)	1.418	-0.102	138489	87,31
CA-46394	RED. ESTIRADO 50,80 (2)	1.174	-0.076	138621	50,80
OU-47424	RED. ESTIRADO 38,10 (1/2)	988	-0.051	138628	38,10
OU-47424	RED. ESTIRADO 44,45 (3/4)	926	-0.076	138629	44,45
1018	RED. ESTIRADO 60,33 (2 3/8)	1.108	-0.076	138630	60,33
MFP-47504	RED. ESTIRADO 55,56 (2 3/16)	1.054	-0.076	138647	55,56
AQM-46896	RED. ESTIRADO 55,56 (2 3/16)	1.172	-0.076	138702	55,56
AQM-46896	RED. TORNEADO 76,20 (3)	1.106	-0.102	138703	76,20
AQM-46896	RED. ESTIRADO 34,93 (3/8)	992	-0.051	138700	34,93
AQM-46896	RED. ESTIRADO 50,80 (2)	1.076	-0.076	138701	50,80
VI-47363	RED. ESTIRADO 61,91 (2 1/16)	1.836	-0.076	138937	61,91
PAJ-47709	RED. ESTIRADO 33,34 (1 5/16)	948	-0.051	138959	33,34

Composición química de la colada / Chemical Analysis of Heat

MEDIDA	OF	COLADA	C	Mn	P	S	SI
88,90	0,00	137513	0,170	0,700	0,013	0,030	0,300
34,93	0,00	137992	0,160	0,690	0,012	0,024	0,310
74,61	0,00	137999	0,170	0,700	0,013	0,030	0,300
38,10	0,00	138232	0,160	0,680	0,013	0,022	0,300
49,21	0,00	138234	0,160	0,680	0,013	0,022	0,300
38,10	0,00	138324	0,170	0,690	0,011	0,031	0,310
38,10	0,00	138324	0,160	0,680	0,013	0,022	0,300
34,93	0,00	138426	0,160	0,690	0,012	0,024	0,310
38,10	0,00	138488	0,160	0,690	0,012	0,024	0,310
87,31	0,00	138489	0,170	0,700	0,013	0,030	0,310
38,10	0,00	138518	0,160	0,690	0,012	0,024	0,310
50,80	0,00	138518	0,160	0,690	0,012	0,024	0,310
38,10	0,00	138628	0,170	0,690	0,011	0,031	0,310
44,45	0,00	138629	0,160	0,690	0,012	0,024	0,310
60,33	0,00	138630	0,170	0,690	0,011	0,031	0,310
55,56	0,00	138647	0,165	0,725	0,018	0,026	0,169
55,56	0,00	138647	0,165	0,725	0,018	0,026	0,169
76,20	0,00	138702	0,165	0,725	0,018	0,026	0,169
33,34	0,00	138703	0,165	0,725	0,018	0,026	0,169

ARANA Y LUPARDO, 2
48490 UGAO-MIRAVALLIES/VIZCAYA (SPAIN)
Tfno.: 946480211
Fax: 946480128
Email: calpradera@calibradospradera.es
www.calibradospradera.es

CERTIFICADO DE CALIDAD/QUALITY REPORT

De acuerdo a /Made according to:

EN 10204/DIN 58049

336

ALBARAN	46814	CLINTE	LES ACTIERS TRANSBEC (1997) LTÉE	CUSTOMER
---------	-------	--------	----------------------------------	----------

NOTES: EN 10277

Productos Cabiñados de acero. Condiciones técnicas de suministro.

2013/12/14

Bright steel products. Technical delivery conditions.

	°C	% Mn	% P	% S	% Si			
34.93	0.00	138700	41007 IS	0.160	0.690	0.012	0.024	0.310
50.80	0.00	138701	41150 IS	0.170	0.690	0.011	0.031	0.310
61.91	0.00	138937	41215 IS	0.170	0.690	0.012	0.030	0.300
93.34	0.00	138959	41007 IS	0.160	0.690	0.012	0.024	0.310

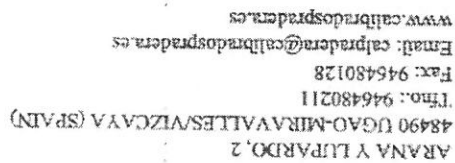
Características mecánicas / Mechanical properties

MEDIDA		OF		COLADA		Tens strength		Yield point		Elongation		Dureza HB	
Measurement		Case Nr.		Resistencia		N/mm ²		0.2% N/mm ²		L ₀ =50 mm		Hardness HB	
88.90		137513	41051 IS	452.00	317.00	29.00	161.00						
34.93		137992	41007 IS	0.00	0.00	0.00	160.00						
74.61		137999	41121 IS	0.00	0.00	0.00	156.00						
38.10		138232	40606 IS	0.00	0.00	0.00	154.00						
49.21		138234	41150 IS	0.00	0.00	0.00	177.00						
38.10		138324	40606 IS	0.00	0.00	0.00	154.00						
34.93		138426	41007 IS	0.00	0.00	0.00	160.00						
38.10		138488	41051 IS	452.00	317.00	29.00	161.00						
87.31		138489	41055 IS	0.00	0.00	0.00	153.00						
38.10		138518	41055 IS	0.00	0.00	0.00	153.00						
50.80		138621	41150 IS	0.00	0.00	0.00	177.00						
38.10		138628	41055 IS	0.00	0.00	0.00	153.00						
44.45		138629	40006 A	450.80	317.46	0.00	0.00						
60.33		138630	41142 IS	0.00	0.00	0.00	165.00						
55.56		138647	39183 A	429.24	302.82	31.00	0.00						
55.56		138702	39183 A	429.24	302.82	31.00	0.00						
76.20		138703	41121 IS	0.00	0.00	0.00	156.00						
34.93		138700	41007 IS	0.00	0.00	0.00	160.00						
50.80		138701	41150 IS	0.00	0.00	0.00	177.00						
61.91		138937	41215 IS	0.00	0.00	0.00	159.00						
33.34		138959	41007 IS	0.00	0.00	0.00	160.00						

Calidad Superficial

DESCRIPTION	OF	Clase
EN 10277-1		

(Observações: BARRAS DE AÇO ESTIRADAS / TORNEADAS EM FRIO SEM ALIVAR



De acuerdo a/Mide according to:

EN 10204/DIN 50049

3.1

Nº CERTIFICADO / CERTIFICATE NR.: 46814

ALBARKAN	46814	CLIENTE	LES ACTIERS TRANSBEC (1997) LTÉE
Delivery Note No.		CUSTOMER	

Norma : EN 10277

Norm : Bright steel products. Technical delivery conditions.

DEPARTAMENTO DE CALIDAD: Certifica que el mencionado producto cumple con las especificaciones del pedido.

QUALITY DEPARTMENT: Certify that the product fulfills the order specifications.

Firmados: Susana Fernández
Directora de Calidad

Fecha/Date: 07/04/2017

[illegible]

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 1018-1025 ROUND BAR

SPECIFICATION:

MIL-S-7097 OR ASTM A108

PART NUMBER:

M1018-R/D DDD WHERE D DDD = DIAMETER IN INCHES
DIA.

EG. 7/8" ROUND BAR = M1018-R0.875

TOLERANCES:

PER ASTM A108 AS FOLLOWS:

SIZE	TOLERANCE
UP TO 1.5" INCL.	+0.000/-0.002
OVER 1.5" TO 2.5" INCL.	+0.000/-0.003
OVER 2.5" TO 4.0" INCL.	+0.000/-0.004
OVER 4.0" TO 6.0" INCL.	+0.000/-0.005
OVER 6.0" TO 8.0" INCL.	+0.000/-0.006

RELEASED
11 2012-09-24
MD

B	REFORMAT ADD ASTM A108 ADD TOLERANCES	CP	12.09.05
A	NEW ISSUE	DS	01.06.12
REV	DESCRIPTION	BY	DATE
DESIGN	DS		
DRAWN	CP		
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	12.09.05		

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA
DRAWING NO. M1018-R
TITLE 1018-1025 ROUND BAR
REV. B
SHEET 1 OF 1
SCALE
NTS

COPYRIGHT © 2001 BY DART AEROSPACE LTD

MATERIAL:	M1018R L375
DATE:	18/07/18
MATERIAL CERT REC'D:	161
QUANTITY RECEIVED:	15'
QUANTITY INSPECTED:	15'
QUANTITY REJECTED:	0
THICKNESS ORDERED:	1.375"
THICKNESS RECEIVED:	1.375"
SHEET SIZE ORDERED:	—
SHEET SIZE RECEIVED:	—
PO / BATCH NO.:	PO040374/5092915

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y	
CORRECT FINISH	Y	
CORROSION	Y	
CORRECT GRAIN DIRECTION	Y	
CORRECT MATERIAL PER M-DRAWING	Y	ARM A-68
CORRECT THICKNESS	Y	
PHOTO REQUIRED	Y	
CORRECT REF # TO LINK CERT	Y	MT-138426
CORRECT MATERIAL IDENTIFICATION	Y	
CORRECT M# ON THE MATERIAL	Y	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	

TYPE OF MATERIAL				
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				
HRC	HRB	DUR A	DUR D	WEBSTER

TYPE OF MATERIAL				
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				
HRC	HRB	DUR A	DUR D	WEBSTER

H:\FORMS\Quality Assurance\approved QAMRIF Material Receipt Inspection Form revd



COLD FINISHED
FLAT BARS

Pd. Ind Basarte S.N.
20720 Azkoitia (Bizkaia)
Spain
www.nuevancal.com
C/R/VAN ESA48418360

Admin. y Finanzas / Accounts
Tel: (+34) 946 667 311
Fax: (+34) 946 261 712
nuevancal@nuevancal.com

Comercial
Tel: (+34) 946 261 712
Fax: (+34) 946 264 626
mandolinos@nuevancal.com

204/36

42A-2426

#2727

CERTIFICADO DE CALIDAD

Destinatario:

LES ACIERES TRANSBEC

COLD ROLL SAB 1018 ACCORDING TO ASTM A108

CERTIFICAMOS:

Que el material suministrado con cargo a los pedidos de referencia y amparado por nuestro albarán N° EXA.773 y fra. N° BV17/286 de acuerdo con la norma EN 10204 / 2.2;

S/Pedidos N°	MATERIA	CALIDAD	COLADA	Composición Química de la colada										Caract. mecánicas laminado		
				C.	Mn.	Si.	S.	P.	Re	N/mm2	Rm	A	%	Re	N/mm2	%
MN-47089	5 X 3/8		171108	0.15	0.77	0.14	0.002	0.016	554.00	580.00				580.00	12.00	
MN-47093	2 X 1/4		590449	0.16	0.76	0.20	0.011	0.017	329.00	495.00				580.00	39.00	
MN-47093	5 X 3/8		171108	0.15	0.77	0.14	0.002	0.016	554.00	580.00				580.00	12.00	
MN-47093	6 X 3/4		170723	0.17	0.75	0.19	0.002	0.021	553.00	580.00				580.00	14.00	
OU-48311	2 X 3/4	FOR 342	171454	0.16	0.73	0.19	0.005	0.017	307.26	446.12				446.12	26.18	
OU-48311	1 X 3/4	FOR 343	171455	0.15	0.70	0.16	0.005	0.017	328.17	455.80				455.80	24.31	
OU-48311	3 X 1	FOR 13	171456	0.15	0.70	0.19	0.004	0.019	319.60	453.88				453.88	26.37	
OU-48311	4 X 1/2	FOR 144	171428	0.16	0.81	0.18	0.011	0.017	315.61	448.72				448.72	26.44	
PAJ-48098	2 X 1/2		171444	0.17	0.79	0.19	0.007	0.016	313.22	462.60				462.60	24.10	
PAJ-48098	3 X 3/8		171436	0.19	0.80	0.24	0.008	0.017	325.45	456.76				456.76	24.91	
PAJ-48098	3 X 3/4		171455	0.15	0.70	0.16	0.005	0.017	328.17	455.80				455.80	24.31	
PAJ-48098	3 X 1-1/2		170400	0.16	0.79	0.18	0.004	0.016	328.17	455.80				455.80	24.31	
PAJ-48098	6 X 1/2		171612	0.16	0.82	0.20	0.004	0.018	550.00	576.00				576.00	13.00	
PAJ-48098	6 X 1		170932	0.17	0.75	0.16	0.005	0.019	557.00	585.00				585.00	14.00	
PAR-48178	8 X 3/4		162602	0.18	0.79	0.16	0.003	0.012	558.00	586.00				586.00	14.00	
PAR-48178	2 X 3/16		54305	0.15	0.70	0.18	0.036	0.011	348.00	481.00				481.00	32.70	
PAR-48178	6 X 1/2		171612	0.16	0.82	0.20	0.004	0.018	550.00	576.00				576.00	13.00	

Certifica (SPAIN), 11 de Septiembre de 2.017
Responsable de Calidad

Handwritten signature and stamp.

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 1018/1025 ROUND BAR

SPECIFICATION:

MIL-S-7097 OR ASTM A108

PART NUMBER:

M1018-R/D DDD WHERE D DDD = DIAMETER IN INCHES
DIA.

EG. 7/8" ROUND BAR = M1018-R0.875

TOLERANCES:

PER ASTM A108 AS FOLLOWS:

SIZE	TOLERANCE
UP TO 1.5" INCL.	+0.000/-0.002
OVER 1.5" TO 2.5" INCL.	+0.000/-0.003
OVER 2.5" TO 4.0" INCL.	+0.000/-0.004
OVER 4.0" TO 6.0" INCL.	+0.000/-0.005
OVER 6.0" TO 8.0" INCL.	+0.000/-0.006

RELEASED
2012-09-24

B	REFORMAT ADD ASTM A108, ADD TOLERANCES	CP	12.09.05
A	NEW ISSUE	DS	01.06.12
REV	DESCRIPTION	BY	DATE
DESIGN	DS		
DRAWN	CP		
CHECKED	CP		
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	12.09.05		
DART AEROSPACE LTD		REV. B	
DRAWING NO.		SHEET 1 OF 1	
M1018-R		SCALE	
1018-1025 ROUND BAR		NTS	
COPYRIGHT ©2001 BY DART AEROSPACE LTD			

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M101861.000 X 03.000	DATE: 18/02/18
QUANTITY RECEIVED: 12'	QUANTITY INSPECTED: 12'
QUANTITY REJECTED: 0	
MATERIAL CERT REC'D: 125	
THICKNESS ORDERED: 1.000"	THICKNESS RECEIVED: 1.000"
SHEET SIZE ORDERED: 12'	SHEET SIZE RECEIVED: 12'
PO / BATCH NO.: P0040374/S092916	

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y	
CORRECT FINISH	Y	
CORROSION	Y	
CORRECT GRAIN DIRECTION	Y	
CORRECT MATERIAL PER M-DRAWING	Y	ASTM A108
CORRECT THICKNESS	Y	
PHOTO REQUIRED	Y	
CORRECT REF # TO LINK CERT	Y	
CORRECT MATERIAL IDENTIFICATION	Y	MT: 171456
CORRECT # ON THE MATERIAL	Y	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK.				
RECORD RESULTS BELOW				
HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL				
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: [Signature]	SIGNED OFF BY: _____
DATE: 18/02/18	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

4262

FEAL-18-V5052

51621

17923

浙江永杰铝业有限公司

Zhejiang Yongjie Aluminum Co., Ltd.

Jiangdong Industrial Area, Xiaoshan Economic and Technology Development Zone, Hangzhou, 311222, China

MILL TEST

To:
EMPIRE RESOURCES, INC.
2116 LINWOOD AVENUE, FORT LEE, NEW JERSEY 07024, USA
TEL: 201.944.2200 X 123/ FAX: 201.944.2226

Invoice No.: YJ170820-2
Date: JUNE 20, 2017

SHIPPING MARKS: N/M

Packaging No.	P O No.	Heat Number	Alloy/ Temper	Specification	Actual Thickness	CHEMICAL COMPOSITION, %											MECHANICAL PROPERTIES			
						N.W. (MT)	G.W. (MT)	Si	Fe	Cu	Mn	Mg	Ni	Zn	Ti	Cr	Al	T.S. (KSI)	Yield (KSI)	Elongation (%)
519-5	R154267	217080011-2	AA5052 H32	0.125"X60"X144"	0.125	2.166	2.264	0.100	0.290	0.010	0.070	2.480	-	0.009	0.011	0.170	96.92	32.6	24.9	10.5
519-6	R154271	017050964-4	AA3003 H14	0.125"X60"X144"	0.124	2.111	2.210	0.200	0.540	0.080	1.040	0.010	-	-	0.024	-	98.10	22.2	19.0	13.5
519-7	R154271	017050964-3	AA3003 H14	0.125"X60"X144"	0.124	2.114	2.214	0.200	0.540	0.080	1.040	0.010	-	-	0.024	-	98.10	22.2	19.0	13.5
520-1	R154177	017051163-2	AA3003 H14	0.036"X48"XC	0.035	4.636	4.710	0.240	0.520	0.070	1.040	0.010	-	-	0.030	-	98.09	22.2	19.9	5.0
520-2	R154286	017050974-2	AA3003 H14	0.050"X60"XC	0.050	4.480	4.584	0.190	0.520	0.080	1.050	0.010	-	-	0.030	-	98.12	21.9	20.7	5.0
520-3	R154286	017051311-1	AA3003 H14	0.050"X48"XC	0.049	4.652	4.718	0.200	0.540	0.090	1.060	0.010	-	-	0.034	-	98.05	22.9	20.3	6.5
520-4	R154286	017050934-1	AA3003 H14	0.040"X60"XC	0.039	4.645	4.712	0.240	0.550	0.100	1.080	0.020	-	-	0.027	-	97.98	22.2	18.7	4.5
520-5	R154276	7101705181-2	AA5052 H32	0.125"X48"X96"	0.124	1.766	1.830	0.100	0.300	0.010	0.010	2.480	-	0.004	0.010	0.210	96.86	33.2	24.7	10.5
520-6	R154276	7101705161-1	AA5052 H32	0.125"X48"X96"	0.124	1.789	1.848	0.100	0.300	0.010	0.010	2.480	-	0.004	0.010	0.210	96.86	33.2	24.7	10.5
520-7	R154276	7101705161-4	AA5052 H32	0.125"X48"X96"	0.124	1.760	1.830	0.100	0.300	0.010	0.010	2.480	-	0.004	0.010	0.210	96.86	33.2	24.7	10.5
520-8	R154278	7101705161-5	AA5052 H32	0.125"X48"X96"	0.124	1.665	1.732	0.100	0.300	0.010	0.010	2.480	-	0.004	0.010	0.210	96.86	33.2	24.7	10.5
521-1	R154284	017051182-2	AA3003 H14	0.050"X48"XC	0.050	4.656	4.714	0.220	0.540	0.090	1.080	0.010	-	-	0.030	-	98.03	22.2	18.1	5.0
521-2	R154284	017050981-2	AA3003 H14	0.050"X60"XC	0.050	4.674	4.750	0.210	0.560	0.080	1.060	0.010	-	-	0.024	-	98.05	22.2	19.3	6.0
521-3	R154284	017050981-1	AA3003 H14	0.050"X60"XC	0.050	4.660	4.634	0.210	0.560	0.080	1.060	0.010	-	-	0.024	-	98.05	22.2	19.3	8.0
521-4	R154284	017051081-2	AA3003 H14	0.050"X60"XC	0.050	4.590	4.664	0.230	0.540	0.070	1.070	0.010	-	-	0.032	-	98.04	21.6	19.9	6.0
521-5	R154276	017050823-3	AA5052 H32	0.190"X48"X96"	0.189	2.082	2.136	0.140	0.220	0.010	0.030	2.380	-	0.003	0.011	0.170	97.02	31.6	24.1	13.0
521-6	R154276	017050823-4	AA5052 H32	0.190"X48"X96"	0.189	2.165	2.226	0.140	0.220	0.010	0.030	2.380	-	0.003	0.011	0.170	97.02	31.6	24.1	13.0
521-7	R154276	017050874-2	AA5052 H32	0.190"X48"X96"	0.180	2.160	2.208	0.150	0.220	0.010	0.040	2.420	-	0.004	0.012	0.180	96.96	31.6	24.4	11.0
522-1	R154260	117060374-2	AA5052 H32	0.160"X57"XC	0.159	4.362	4.400	0.130	0.280	0.010	0.080	2.520	-	0.010	0.013	0.170	96.73	32.8	23.9	15.5
522-2	R154260	117060371-2	AA5052 H32	0.160"X57"XC	0.159	4.314	4.354	0.130	0.280	0.010	0.080	2.520	-	0.010	0.013	0.170	96.73	33.6	23.9	15.0
522-3	R154069	1-174-2-1	AA5052 H32	0.248"X60"XC	0.248	4.317	4.352	0.060	0.260	0.010	0.010	2.500	-	0.010	0.020	0.210	96.94	34.4	24.2	16.0
522-4	R154069	2-178-2-2	AA5052 H32	0.248"X60"XC	0.249	4.135	4.172	0.060	0.220	0.010	0.010	2.430	-	0.010	0.020	0.200	97.05	34.1	23.8	15.0
522-5	R154139	017060674-1	AA5052 H32	0.190"X48"X96"	0.190	2.110	2.168	0.150	0.220	0.010	0.040	2.420	-	0.004	0.012	0.180	96.96	31.6	24.4	11.0

MATERIAL CONFORMS FOR ALLOY 5052, H32 ALUMINUM ASSOCIATION STANDARDS, ASTM B209-10, AMS-QQ-A-250/85 AND AMS-4078L AND MATERIAL IN ALLOY 3003, H14 CONFORMS TO ALUMINUM ASSOCIATION STANDARDS, ASTM B209-10, AMS-QQ-A-250/2 AND AMS 4086K, COUNTRY OF MELT AND MANUFACTURE IN CHINA.

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL 5052-H32 ALUMINUM SHEET

SPECIFICATION: QQ-A-250/8 OR AMS-QQ-A-250/8
OR AMS 4014
OR ASTM B209

PART NUMBER: M5052H32S XXX THK

WHERE "XXX" = SHEET THICKNESS (IN INCHES)

EG. 0.063" THICK SHEET = M5052H32 063

PREFERRED SIZE: XXX BY 4FT BY 8FT

RELEASED
2009-10-30
MP

B	REFORMAT DWG. ADD B209 SPEC (2X DB-1), PAR 08-0204	CP	09.09.26
A	NEW ISSUE	DS	01.09.08
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	09.09.26		
DART AEROSPACE LTD		REV. B	
DRAWING NO. M5052H32S		SHEET 1 OF 1	
TITLE 5052-H32 SHEET SPEC		SCALE NTS	
COPYRIGHT © 2001 BY DART AEROSPACE LTD			

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

QC 18 INSPECTION	
ENGINEERING SIGNOFF (if required)	INSPECTED BY: <u>AM</u>
SIGNED OFF BY:	DATE: <u>18/07/18</u>

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK.				
RECORD RESULTS BELOW				
HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL				
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

Testers located in the Quality Office

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	(Y)	
CORRECT FINISH	(Y)	
CORROSION	(Y)	
CORRECT GRAIN DIRECTION	(Y)	
CORRECT MATERIAL PER M-DRAWING	(Y)	ASTM B209
CORRECT THICKNESS	(Y)	
PHOTO REQUIRED	(Y)	
CORRECT REF # TO LINK CERT	(Y)	14:7101705161-4
CORRECT MATERIAL IDENTIFICATION	(Y)	
CORRECT # ON THE MATERIAL	(Y)	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	(Y)	
DOES THIS REQUIRE AN EXTRUSION REPORT	(Y)	

MATERIAL CERT REC'D:	32.51	THICKNESS ORDERED:	0.125"
QUANTITY RECEIVED:	32.51	THICKNESS RECEIVED:	0.125"
QUANTITY INSPECTED:	32.51	SHEET SIZE ORDERED:	4'x8'
QUANTITY REJECTED:	0	SHEET SIZE RECEIVED:	4'x8'

MATERIAL: M5052485.125 DATE: 18/07/18

PO / BATCH NO.: 10042324/5092917

MATERIAL RECEIPT INSPECTION FORM

Heart: M55574 over page 881vante

EN 10204:2004-3.1

All bundles listed below were produced using steel from Heat M52574 issued by GERDAU-MONROE and were completed from Eaton Steel Job 808632

Bundled tags with Eaton Steel identifiers reference the steel grade, heat, purchase order number, where applicable, part number, product description and quantity. Material produced in accordance with Eaton Steel's Quality Manual QM 00002 Rev 0 dated 11/21/2013

We hereby certify the above to be in conformance, and a true copy of data represented in company records. This steel was not subject to weld repair or exposed to mercury while in the possession of Eaton Steel

<p>Created on 09-Jan-2015</p> <p>Mar Benjamin Corporate Mentorist</p> <p><i>The information is provided in accordance with the information given on the website and is subject to change without notice.</i></p>	<p>10221 Capital Avenue, Oak Park, MI 48237 USA</p> <p>http://www.nationaltal.com</p> <p>Tel: 248-390-3434</p> <p>Fax: 248-386-1434</p>
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Tel: 248-398-3434
Fax: 248-398-1434



GERDAU

GERDAU SPECIAL STEEL NORTH AMERICA
5581 MORRILL ROAD
JACKSON, MICHIGAN 48301

CERTIFIED MATERIAL TEST REPORT

ORIGINAL ORDER NUMBER	CUSTOMER PART NUMBER	DATE ORDERED	DATE ORDER RECEIVED	DATE
1423324	1012462/4140E8VD	05/25/14	08/16/12	11/05/13

REPORT TO
DAN MCNAUGHTON
EATON STEEL CORPORATION
10221 CAPITAL
OAK PARK, MI 48237

REPORT TO
DAN MCNAUGHTON
EATON STEEL CORPORATION
10221 CAPITAL
OAK PARK, MI 48237

EATON STEEL CORPORATION
VULCAN HEAT TREATING
10 CROSCREEK TRAIL
PELHAM, AL 35124

OAK PARK, MI 48237

PELHAM, AL 35124

ORDERED

GRADE	THICKNESS	RND	LENGTH
4140	0 3/4"	RND	20' 2"

ITEM 1012462 REV 1 DTD 03/05/12. A32/A29M-12. A322-07

CHEMICAL ANALYSIS

C	Mn	P	S	Si	NI	Cr	Mo	Cu	Sn	Al
0.41	0.85	0.012	0.020	0.26	0.09	1.00	0.18	0.21	0.008	0.049
V	ND									
S.002	0.002									

GRAIN SIZE

SPECIFICATION ASTM E112

FINE GRAIN 5-8

HARDENABILITY

SPECIFICATION ASTM A255/A304

THEORETICAL	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34
51 2 3 4	57	57	57	57	57	55	54	52	50	48	46	45	45	43	40	38					

DI CALCULATION

SPECIFICATION CAT 1B0024

5.31

REDUCTION RATIO

SPECIFICATION ITEM 1012462

RATIO= 81.5 TO 1.0

PAGE 1

We certify that these data are correct and in compliance with specified requirements.

Gerdau Monroe
3008 East Front Street
Monroe, MI 48161

Wendy J. Craig
Quality Assurance Representative

CONTINUED ON PAGE 2



GERDAU SPECIAL STEEL NORTH AMERICA
5591 MORRILL ROAD
JACKSON, MICHIGAN 49201

CERTIFIED MATERIAL TEST REPORT

ORDER NUMBER	CUSTOMER PART NUMBER	TEST NUMBER	YOUR ORDER NUMBER	DATE
142324	1012462/4140EFD	M52574	283416 102	11/05/13

REPORT TO

DAN MCMAUGHTON
EATON STEEL CORPORATION
10221 CAPITAL

SENT TO

EATON STEEL CORPORATION &
VULCAN HEAT TREATING
10 CROSSCREEK TRAIL

OAK PARK, MI 48237

PELHAM, AL 35124

ORDERED

GRADE	SIZE	TEST	LENGTH
4140	0 3/4"	RND	20' 2"

ITEM 1012462 REV 1 DTD 03/05/12: A29/A29M-12; A322-07

RESIDUAL MAX SPECIFICATION ITEM 1012462

P+S = 0.0320

RESIDUAL MIN SPECIFICATION ITEM 1012462

P+S = 0.0320

ASTM E381 MACRO ETCH SATISFACTORY: S1/R1/C1; MEETS SAE J422

S5/05 RATING (WORST FIELD):

** MATERIAL 100% MELTED AND MANUFACTURED IN THE U.S.A. BY THE ELECTRIC
ARC FURNACE AND CONTINUOUS CASTING METHOD. THE PRODUCT HAS NOT
BEEN REPAIRED BY WELDING AND THIS MATERIAL HAS NOT BEEN EXPOSED
TO MERCURY OR TO ANY OTHER METAL ALLOY THAT IS LIQUID AT AMBIENT
TEMPERATURES DURING PROCESSING OR WHILE IN OUR POSSESSION.
GERDAU MONITORS ALL INCOMING SCRAP AND ALL HEATS OF STEEL TO ENSURE THAT
PRODUCTS SHIPPED ARE FREE OF RADIOACTIVE MATERIAL.

PAGE 2 OF 2

We certify that these data are correct and in compliance with specified requirements.

Gerdau Monroe
3000 East Front Street
Monroe, MI 48161

Wendy L. Crady
Wendy L. Crady
Quality Assurance Representative



Vulcan Threaded Products
10 Cross Creek Trail
Pellham, AL 35124
Tel: (205) 620-5100
Fax: (205) 620-5150

JOB MATERIAL CERTIFICATION

Job No: 344313

Contact: 575.204.22 575.26364 575.26926

Job information

Certified Date: 12/7/13

Customer: **Eaton Steel Corporation**

Customer Part No: 1012463-001

Order PO No: 143438

Note: WO 153733

Part information

Part No: HRB 4140 .750x240 QSTES

Part Group: HT TOLL

Place Weight: 30.059

Name: Hot Rod Bar

Alloy Type: 4100

Alloy - Temper: 4140 -

Applicable Specifications

Type	Spec
1	1
2	2
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100	100

Customer Specifications

Test Results

See following pages for tests

Certified Chemical Analysts

Team	Age	Comp	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Team	Age	Comp	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Material was manufactured, tested and inspected in accordance with Vulcan Threaded Products Inc. Quality Assurance Program and Material Rev. A dated 02/21/91. Processes material in Quenched and Tempered - Stress Free. No weld repair performed on the material. No Mercury used in the production of this material. Material Manufactured in the USA.

Average Gauss Reading: <15
The microstructure consisted of 100% lamported martensite from the surface to the center.

Test specimens meet the ASTM A370-12a specifications.

Phar Online 12/27/13 9:43 AM vnk dcm Page 1 of 2

cert 377068

Vulcan
 Vulcan Treaded Products
 10 Coas Creek Trail
 Pellham, AL 35124
 Tel (205) 820-5100
 Fax (205) 820-5150

JOB MATERIAL CERTIFICATION

Job No: 344313
 Job Information
 Certified Date: 12/7/13
 Containers: S7520422 S7526364 S7526926

Test Results

Test No 27760 Test Quench & Temp Physical (lbs)									
Description	Temp (°F)	Yield (psi)	Elongation (%)	Reduction of Area (%)	Modulus (psi)	Surface Hardness (HR15)	Charpy Impact (ft-lb)	Notes	
Quench & Temp	142.00	128,000	17.8	40	99	30	30		
Physical Data									

Test No 27759 Test Quench & Temp Information (lbs)									
Description	Temp (°F)	Yield (psi)	Elongation (%)	Reduction of Area (%)	Modulus (psi)	Surface Hardness (HR15)	Charpy Impact (ft-lb)	Notes	
Quench & Temp	142.00	128,000	17.8	40	99	30	30		
Physical Data									

David Chubaty
 David Chubaty
 Chubaty, David - Supervisor
 Date 12/7/13
 Per Online 12/7/13 8:43 AM PC: 005m Page 2 of 2

REV.	DESCRIPTION	ECN #	DATE	BY	APPROVED
A	NEW ISSUE	17-790	17-12-13	VM	ML

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL : AISI 4140 ROUND BAR
MINIMUM ROCKWELL C = 20 Rc
MAXIMUM ROCKWELL C = 38 Rc

SPECIFICATION: ASTM A29, AMS 6349, AMS 6382, AMS 6529

PART NUMBER: MT-4140-R(D,DD)
WHERE "D,DD" = DIAMETER IN INCHES
EX. 4" ROUND BAR = MT-4140-R-4.000

PART AEROSPACE Hamilton, Ontario, Canada	
TITLE AISI 4140 ROUND BAR	
PART NO. MT-4140-R	REV A
INITIALS AND DATE DESIGNED BY: VM 17/12/13 DRAWN BY: VM 12/13/2017 CHECKED BY: ML 12/20/2017 APPROVED BY: ML 12/20/2017	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES DIMENSIONS ARE TO BE AFTER FINISHING TOLERANCES: DECIMALS .015 FRACTIONS 1/32 ANGLES .5° SURFACE FINISH UNLESS OTHERWISE SPECIFIED	
SHEET 1 OF 1 THE DRAWING IS PRINTED AND COVERED WITH A BLUE INK. IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF THE COMPANY.	

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>AT</u>	SIGNED OFF BY: _____
DATE: <u>18/07/18</u>	DATE: _____

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK.				
RECORD RESULTS BELOW				
HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL				
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

Testers located in the Quality Office

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y	
CORRECT FINISH	Y	
CORROSION	Y	
CORRECT GRAIN DIRECTION	Y	
CORRECT MATERIAL PER M-DRAWING	Y	
CORRECT THICKNESS	Y	
PHOTO REQUIRED	Y	
CORRECT REF # TO LINK CERT	Y	
CORRECT MATERIAL IDENTIFICATION	Y	
CORRECT # ON THE MATERIAL	Y	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	

MATERIAL CERT REC'D: <u>Yes</u>	QUANTITY RECEIVED: <u>15'</u>	THICKNESS ORDERED: <u>0.750"</u>
QUANTITY INSPECTED: <u>15'</u>	SHEET SIZE ORDERED: <u>—</u>	THICKNESS RECEIVED: <u>0.750"</u>
QUANTITY REJECTED: <u>0</u>	SHEET SIZE RECEIVED: <u>—</u>	

MATERIAL: M7-414007-4450 R0.750 DATE: 18/07/18

PO / BATCH NO.: PO040374/5043067

MATERIAL RECEIPT INSPECTION FORM



NIAGARA LASALLE CORPORATION
1412 150th Street
Hammond IN 46327-1799

CERTIFICATION

CERTIFICATE	Rev
H184359	2
DATE	02/06/18
PAGE	6

PURCHASE ORDER B393391
ORDER 960193-3
CUSTOMER ITEM V012162
GRADE Q14140
SIZE 2.2500
LENGTH 20" 0" / 24" 0"
ITEM 142250240Q04A
SHAPE Round
SIZE MM 57.1500 MM
LENGTH MM 6096 / 7315.2

4140M2 CA/L-T1 OT-HR-STEEL FREE 125K TS 105K YS (0.2% 100K) 16% EL 50% R/A SURFACE HBN 269/321 Spec/Rev: ASTM A434-06(2012) CL-BC Spec/Rev: ASTM A576-90B(2012)
4140M2 CA/L-T1 OT-HR-STEEL FREE 125K TS 105K YS (0.2% 100K) 16% EL 50% R/A SURFACE HBN 269/321 Spec/Rev: ASTM A434-06(2012) CL-BC Spec/Rev: ASTM A576-90B(2012)

HEAT	GRAIN PRACTICE	SOURCE / MELTED	CAST	REDUCTION RATIO	DI
A174907	FINE(5-8)	STEEL DYNAMICS (USA)	BLOOM	35.2:1	5.85

C	MN	P	S	SI	NI	CR	MO	CU	AL	V
0.400	0.870	.011	.016	0.250	0.100	1.020	.220	.220	.032	.002

N	TE	AS	PB	SE	BI	B	NS
.009	N/A	N/A	N/A	N/A	N/A	.0003	N/A

JOB	TENSILE	.2% YIELD	ELONG	R OF A	HARDNESS	.02% YIELD	SR TEMP
HS46434	149,242 PSI	133,385 PSI	18.70	59.60	HBN = 293	131.598	

JOB	MACRO	SURFACE	AUSTENITIZED	TEMPERATURE	TIME	TEMPERATURE	TIME	STRESS
HS46434	SATISFACTORY	HBN = 269	1650F	21 HRS	WATER	1150F	3.9 HRS	STRESS FREE

01	02	03	04	05	06	08	10	12	14	16	18	20	24	26	28	32	40
56	56	56	56	56	56	56	54	50	50	48	46	45	43	40			

LOT	JOB	WEIGHT (LBS)	PIECES	LOT	JOB	WEIGHT (LBS)	PIECES
6573137	HS46434	3,980	14	5589267	HS46434	4,260	13

WE, hereby certify that these goods were produced in compliance with all applicable requirements of sections 6, 7, and 12 of the Fair Labor Standards Act, as amended, and all regulations and orders of the United States Department of Labor issued under section 14 thereof. Material was not exposed to mercury or any metal alloy that is liquid at ambient temperature during processing or while in our possession. No weld repairs performed on the above material.

Walter P. Kreitzler - Director of Q.A./Chief Metallurgist
BY: *[Signature]*

CERTIFICATE OF TEST


REV.	DESCRIPTION	EON #	DATE	BY	APPROVED
A	NEW ISSUE	17-720	17.12.13	VM	MM

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL : AISI 4140 ROUND BAR
 MINIMUM ROCKWELL C = 20 Rc
 MAXIMUM ROCKWELL C = 38 Rc

SPECIFICATION: ASTM A29, AMS 6349, AMS 6382, AMS 6529

PART NUMBER: MT-4140-R(D,DDD)
 WHERE "D,DDD" = DIAMETER IN INCHES
 EX. 4" ROUND BAR = MT-4140-R-4.000

	
TITLE AISI 4140 ROUND BAR	
PART NO MT-4140-R	
TOOL NO.	REV A
DESIGNED BY: VM 17/12/13 CHECKED BY: VM 12/13/2017 APPROVED BY: DP 12/20/2017 SCALE: 1:1 SHEET 1 OF 1	
TOLERANCES: DECIMALS: 1/100 ANGLES: 1/16 SURFACE: 1/16 THICKNESS: 1/16	

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>AT</u>	SIGNED OFF BY: _____
DATE: <u>18/07/18</u>	DATE: _____

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK.				
RECORD RESULTS BELOW				
HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL				
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

Testers located in the Quality Office

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y	
CORRECT FINISH	Y	
CORROSION	Y	
CORRECT GRAIN DIRECTION	Y	
CORRECT MATERIAL PER M-DRAWING	Y	ASTM A229
CORRECT THICKNESS	Y	
PHOTO REQUIRED	Y	
CORRECT REF # TO LINK CERT	Y	MT-A774907
CORRECT MATERIAL IDENTIFICATION	Y	
CORRECT # ON THE MATERIAL	Y	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	

MATERIAL: <u>MT-4400T-02.250</u>	DATE: <u>18/07/18</u>
MATERIAL CERT REC'D: <u>10'</u>	QUANTITY RECEIVED: <u>10'</u>
QUANTITY INSPECTED: <u>10'</u>	QUANTITY REJECTED: <u>0</u>
THICKNESS ORDERED: <u>0.250"</u>	THICKNESS RECEIVED: <u>0.250"</u>
SHEET SIZE ORDERED: _____	SHEET SIZE RECEIVED: _____
PO / BATCH NO.: <u>10040374/5092919</u>	

MATERIAL RECEIPT INSPECTION FORM

Part

Py 5/6N

TC No.: Date & Time : ESA-442293 2017/11/18 - 00:59:38

Customer PO NO./Item: OU-48322 / 1

BOL NO.: 1000262272

Cust. Part No.: 313 X 96 X 240

Carrier: GBS & SONS TRUCKING LTD. - 413 REV 1050

1

Standard Surface Flatness 1/2 A6

Insp T/R : Test Report As Per Spec

Cust Use: STRUCTURAL STEEL

ESSAR STEEL ALGONIA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DISCLOSED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN. ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'S STANDARD RECORD KEEPING PRACTICES.

THIS WILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF EDSAR STEEL. ALSO, NO ONE IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL 705/915-4295 FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF DOCUMENT. THIS TEST REPORT HAS BEEN GENERATED BY A COMPUTERIZED SYSTEM AND IS VALID WITHOUT A PHYSICAL SIGNATURE.

MEETS EN 10204:2004 TYPE 3.1
ISO QUALITY AND ENVIRONMENT

ISO QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ALGOMA.COM

ALL HEATS FULLY KILLED

HEATS INDICATED WITH () FINE GRAINED
HEATS INDICATED WITH (+) Made in Canada for NAFTA duty preferences and NAFTA marking purposes

HEATS INDICATED WITH (+) Made in Canada for NAFTA duty preference and NAFTA marking purposes

Dimensions (T x W x L)		Batch No.	Heat No.-MS	Quantity	No. of Pcs	Dimensions (T x W x L)		Batch No.	Heat No.-MS	Quantity	No. of Pcs			
0.3130" x 96.000" x 240.00"		BD6051	2767D4-58	8.180 LB	4	0.3130" x 96.000" x 240.00"		BD6052	2767D4-58	8.180 LB	4			
.....														
Heat No. (wt%)		C	Mn	P	S	Si	Cr	Ni	Cu	Mo	Al	Nb	V	Ti
2767D4 +		0.15	1.03	0.009	0.006	0.298	0.03	0.02	0.04	0.02	0.040	0.000	0.000	0.003
.....														
Tensile Tests														
.....														
MECHANICAL PROPERTIES														
.....														
Heat No.	Batch No.	SRCE	LAB	GAUGE	COND	METH	DIR	LOC	YIELD(KS)	TENSILE(KSI)	EL SCALE	ELONG(%)		
2767D4	1111	166"	ALG	0.3130	AR	.2	T	F	48.0	70.0	8"	27		
2767D4	1111	166"	ALG	0.3130	AR	.2	T	F	47.0	69.0	8"	25		

KASHIF REHMAN
MANAGER METALLURGICAL SERVICES

[illegible]

REV	DESCRIPTION	ECN #	DATE	BY	APPROVED
B	REMOVED LENGTH AND WIDTH DIMENSIONS	17.575	26/09/2017	SAC	WM

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL:

SPECIFICATION:

PART NUMBER:

EXAMPLE:

HOT ROLLED STEEL PLATE

ASTM A36 OR ASTM A1011 OR 44W OR ASTM A1018

MT-HRS-P-[T.TTT]

WHERE T.TTT IS PLATE THICKNESS IN INCHES

MT-HRS-P-0.750

TOLERANCES PER MANUFACTURER SPECIFICATIONS

PART AEROSPACE		TITLE HOT ROLLED STEEL PLATE	
DATE 09/27/2017		REV B	
DESIGN BY SAC 09/27/2017		FRAGMENTS & LB XX 1.51	
CHECKED BY VAN 09/27/2017		ANGLES & LB XX 1.51	
INFO. APPR. VAN 09/27/2017		1. DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED	
APPROVED BY VAN 10/05/2017		2. INTERFERENCES TO BE LARGE THAN 2009	
DATE 09/27/2017		3. AFTER PARTS SHEET 1 OF 1	
SCALE N/A		WEIGHT N/A	
COPYRIGHT © 2017 BY PART AEROSPACE LTD			

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

QC 18 INSPECTION	
ENGINEERING SIGNOFF (if required)	INSPECTED BY: <u>AT</u>
SIGNED OFF BY:	DATE: <u>18/6/18</u>

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK.				
RECORD RESULTS BELOW				
HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL				
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

Testers located in the Quality Office

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	(N)	
CORRECT FINISH	(Y)	
CORROSION	(N)	
CORRECT GRAIN DIRECTION	(Y)	
CORRECT MATERIAL PER M-DRAWING	(Y)	44m
CORRECT THICKNESS	(Y)	
PHOTO REQUIRED	(N)	
CORRECT REF # TO LINK CERT	(Y)	MT 276704
CORRECT MATERIAL IDENTIFICATION	(Y)	
CORRECT M# ON THE MATERIAL	(Y)	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	(N)	
DOES THIS REQUIRE AN EXTRUSION REPORT	(N)	

MATERIAL: <u>MT-HES-P-0.3125</u>	DATE: <u>18/6/18</u>
MATERIAL CERT REC'D: <u>1/2</u>	QUANTITY RECEIVED: <u>16.5t</u>
QUANTITY INSPECTED: <u>16.5t</u>	QUANTITY REJECTED: <u>0</u>
THICKNESS ORDERED: <u>0.3125</u>	THICKNESS RECEIVED: <u>0.3125</u>
THICKNESS ORDERED: <u>0.3125</u>	THICKNESS RECEIVED: <u>0.3125</u>
SHEET SIZE ORDERED: <u>4x4'</u>	SHEET SIZE RECEIVED: <u>4x4'</u>
PO / BATCH NO.: <u>60040374/50921</u>	

MATERIAL RECEIPT INSPECTION FORM

Material Test Report

Manifest: 337833

Ticket:

5590165

Our Order: 444849 - 2
 Alloy Temper: 6061 T6511
 Die: ES05758
 Part: V138822
 Description: 1.375
 Print Date: 3/28/18

R146572

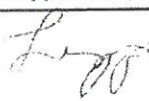
Chemical Composition Range										
6061	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	OtherEach	OtherTotal
Min	0.40	0.15	0.15	0.8	0.04	0.35	0.25	0.15	0.05	0.15
Max	0.8	0.7	0.40	0.15	1.2	0.35	0.25	0.15	0.05	0.15

Mechanical Properties										
Sample ID	Cast #	Lot #	Test Date	Ultimate Tensile	Yield	2% offset	Elongation	2" gage length	Strength ksi	
430656	39756	A11	3/28/18	40.26	35.04		11.9			

Applicable Specifications: ASTM B221-14
 AMS-QQ-A200/8A
 Country of Origin: ONTARIO, CANADA

Can Art Aluminum Extrusion Inc. certifies that materials shipped under this order have been inspected and tested in accordance with Aluminum Association and agreed upon customer specifications. Can Art assumes no liability for additional costs which may be incurred during the customer's manufacture and sale of its products, and is subject only to the replacement of any materials not within agreed upon specifications provided written notification is received by Can Art within 30 days from the date of shipment.

Evan Eng, Quality Assurance Manager



SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR

SPECIFICATION: QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
OR ASTM B211 OR ASTM B221

PART NUMBER: M6061T6R[D,DDD]
[D/A]

WHERE "D DDD" = DIAMETER IN INCHES

EG. 5/8" ROUND BAR = M6061T6R0.625

RELEASED
2009-09-09
NAT

B	REFORMAT DMG ADD B2118 B221 SPEC (2N DB-1)	CP	09.07.13
A	NEW ISSUE	DS	01.06.03
REV	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG APPR			
APPROVED			
DE APPR			
DATE	09.07.13		

DART AEROSPACE LTD		REV. B
HAWKESBURY, ONTARIO CANADA		SHEET 1 OF 1
DRAWING NO. M6061T6R		SCALE
TITLE		NTS
6061-T6 ROUND BAR		
COPYRIGHT © 2003 BY DART AEROSPACE LTD		

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M60617681.375	DATE: 18/07/18
MATERIAL CERT REC'D: 1/25	QUANTITY RECEIVED: 15'
QUANTITY INSPECTED: 15'	QUANTITY REJECTED: 0
PO / BATCH NO.: P0040374/5092922	
THICKNESS ORDERED: 1.375"	THICKNESS RECEIVED: 1.375"
SHEET SIZE ORDERED: —	SHEET SIZE RECEIVED: —

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/>	
CORRECT FINISH	<input checked="" type="checkbox"/>	
CORROSION	<input checked="" type="checkbox"/>	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/>	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/>	AMS-QA-A20018
CORRECT THICKNESS	<input checked="" type="checkbox"/>	
PHOTO REQUIRED	<input checked="" type="checkbox"/>	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/>	M60617681.375
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/>	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/>	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/>	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/>	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK.				
RECORD RESULTS BELOW				
HRC	HRB	DUR A	DUR D	WEBSTER

Testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>AM</u>	SIGNED OFF BY: _____
DATE: 18/07/18	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

49465

R4140-411

50373

14389

Eaton Steel Bar Company Inspection Certificate 1701209

EN 10204:2004-3.1

Heat: 0000 22442 our trace 2/6 + 3/6 Heat: 13080470 4/6 + 5/6 + 6/6

Customer	BOL	Ship Date	Customer PO	Item	Customer Item	Item Description
	225539	19-Feb-2018	B40059	8556 rev 008	013733	4 HR RD 61407 KR 21/24th SBO OTSF VD Co-AI-FG MST

All bundles listed below were produced using steel from Heat 12080470 issued by GENDAL-BRAZIL and were completed from Eaton Steel Job 823764.

Chemistry	Description	Value	Units	Deminy	Description	Value	Units
C	Carbon	0.41000	PMGT	J30	30/16 inch from Quenched End	42	HRC
Mn	Manganese	0.94000	PMGT	J32	32/16 inch from Quenched End	42	HRC
P	Phosphorus	0.01400	PMGT				
S	Sulfur	0.01400	PMGT				
Si	Silicon	0.29000	PMGT				
Al	Aluminum	0.09000	PMGT				
Cr	Chromium	1.04000	PMGT				
Mo	Molybdenum	0.24000	PMGT				
Al	Aluminum	0.01700	PMGT				
Cu	Copper	0.16000	PMGT				
V	Vanadium	0.00400	PMGT				
N	Nitrogen	0.00570	PMGT				
DI	Ideal Diameter	6.62910	IN				
SAE J422 OX	SAE J422 Oxide Rating	0.0 - 5.0	NIN				
SAE J422 SI	SAE J422 Silicate Rating	0.0 - 5.0	RON				
MACRO ETCH	Report macro etch results.						
DIAMETER	Diameter	4.0000 - 4.0625	IN				
J1	1/16 inch from Quenched End	59	HRC				
J2	2/16 inch from Quenched End	59	HRC				
J3	3/16 inch from Quenched End	58	HRC				
J4	4/16 inch from Quenched End	58	HRC				
J5	5/16 inch from Quenched End	58	HRC				
J6	6/16 inch from Quenched End	57	HRC				
J7	7/16 inch from Quenched End	57	HRC				
J8	8/16 inch from Quenched End	57	HRC				
J9	9/16 inch from Quenched End	56	HRC				
J10	10/16 inch from Quenched End	56	HRC				
J11	11/16 inch from Quenched End	55	HRC				
J12	12/16 inch from Quenched End	54	HRC				
J13	13/16 inch from Quenched End	52	HRC				
J14	14/16 inch from Quenched End	49	HRC				
J15	15/16 inch from Quenched End	51	HRC				
J16	16/16 inch from Quenched End	49	HRC				
J17	17/16 inch from Quenched End	46	HRC				
J18	18/16 inch from Quenched End	43	HRC				
J19	19/16 inch from Quenched End	43	HRC				
J20	20/16 inch from Quenched End	42	HRC				
J21	21/16 inch from Quenched End	42	HRC				
J22	22/16 inch from Quenched End	42	HRC				
J23	23/16 inch from Quenched End	42	HRC				
J24	24/16 inch from Quenched End	42	HRC				
J25	25/16 inch from Quenched End	42	HRC				
J26	26/16 inch from Quenched End	42	HRC				
J27	27/16 inch from Quenched End	42	HRC				
J28	28/16 inch from Quenched End	42	HRC				

We hereby certify the above to be in conformance, and a true copy of data represented in company records. This steel was not subject to weld repair or exposed to mercury while in the possession of Eaton Steel.

Created on 19-Feb-2018
Mare Benjamin, Corporate Metallurgist
10221 Capital Avenue, Oak Park, MI 48237 USA
http://www.eatonsteel.com
Tel: 248-398-3434
Fax: 248-398-1434

GERDAU
CHARQUEADAS



CERTIFICADO DE QUALIDADE
QUALITY CERTIFICATE
CERTIFICADO DE CALIDAD

OUR MANAGEMENT SYSTEM IS CERTIFIED TO ISO 9001 / ISO 14001 / ISO 18001

PART NUMBER 8168		PESO/WEIGHT (KG) 40.553.000		MATERIAL/MATERIAL 705013345		QUALIDADE/GRADE 4140TR		PRODUTO/PRODUCT HOT ROLLED ROUND BAR		Cert. N° 0000022442						
CLIENTE/CLIENT BATON STEEL BAR COMPANY								NO HEAT TREATMENT AS ROLLED		CORRIDA/HEAT 12080470						
NORMA/SPECIFICATION SPEC FOR ITEM 8168 006 23.01.2014																
Nota Fiscal/Invoice Pedido/Cust. Order Ord-Formec/Ord-Supply Lot e/Batch Peso/Weight (kg)																
0000017226		162566		5336580 - 8108897269		1208047006		22.523.000								
0000017311		162566		5336580 - 8108972888		1208047006		13.530.000								
0000017692		162566		5336580 - 8109066466		1208047007		4.500.000								
ANALISE QUIMICA/CHEMICAL COMPOSITION																
C	Fe	Si	P	S	Cr	Mn	Mo	V	Cu	Sn	Al	Ti	Nb	N	B	Pb
0.410	0.94	0.29	0.014	0.014	1.04	0.09	0.24	0.0040	0.180	0.0120	0.0170	0.0010	0.0040	0.0057	0.0002	0.0010
H	Ca	As	SD	DI												
1.00	0.0008	0.0030	0.0020	6.6291												
ENSAIOS MECANICOS/MECHANICAL PROP																
Hardness																
HB																
306.00																
ENSAIOS METALOGRAFICOS/METALLOGRAPHIC TESTS																
Authentic Grain Size																
7																
MICROINCLUSOES/INCLUSION RATING NUMBER																
ASTM/SAE																
REGULAR	A - TS	A - HS	B - TS	R - HS	C - TS	C - HS	D - TS	D - HS								
1.5	1.0	0.0	1.5	0.0	0.0	1.0	0.0	0.0								
SAE																
REGULAR	Oxide	Silication														
0.0	0.0															
MACROGRAFIA/MACROGRAPHY																
Blue Etch																
Fracture																
(H)																
1																

2/6

3/6

GERDAU **CHARQUEADAS**



OUR MANAGEMENT SYSTEM IS CERTIFIED TO ISO 9001 / 15189 / 15189-01 / 15189-02 / 15189-03

ISO 9001:2008
ISO 14001:2004
ISO 16001:2004

CERTIFICADO DE QUALIDADE
QUALITY CERTIFICATE
CERTIFICADO DE CALIDAD

PART NUMBER 8168		PESO/WEIGHT (KG) 40.553.000		MATERIAL/MATERIAL 70501345		PRODUTO/PRODUCT HOT ROLLED ROUND BAR NO HEAT TREATMENT		CORRIDA/HEAT 12080470																																																				
CLIENTE/CIENT		BATCH STEEL BAR COMPANY		QUALIDADE/GRADE 4140TMR		BITOLA/SIZE 101,60 mm																																																						
<p>TEMPERABILIDADE/HARDENABILITY</p> <table border="1"> <tr> <td>1/16"</td> <td>2/16"</td> <td>3/16"</td> <td>4/16"</td> <td>5/16"</td> <td>6/16"</td> <td>7/16"</td> <td>8/16"</td> <td>9/16"</td> <td>10/16"</td> <td>11/16"</td> <td>12/16"</td> <td>14/16"</td> <td>16/16"</td> <td>18/16"</td> <td>20/16"</td> <td>22/16"</td> </tr> <tr> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> </tr> <tr> <td>59,5</td> <td>59,1</td> <td>58,8</td> <td>58,2</td> <td>58,0</td> <td>57,8</td> <td>57,5</td> <td>57,0</td> <td>56,5</td> <td>56,0</td> <td>55,6</td> <td>54,0</td> <td>52,5</td> <td>51,3</td> <td>49,8</td> <td>46,5</td> <td>43,5</td> </tr> </table>										1/16"	2/16"	3/16"	4/16"	5/16"	6/16"	7/16"	8/16"	9/16"	10/16"	11/16"	12/16"	14/16"	16/16"	18/16"	20/16"	22/16"	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	59,5	59,1	58,8	58,2	58,0	57,8	57,5	57,0	56,5	56,0	55,6	54,0	52,5	51,3	49,8	46,5	43,5
1/16"	2/16"	3/16"	4/16"	5/16"	6/16"	7/16"	8/16"	9/16"	10/16"	11/16"	12/16"	14/16"	16/16"	18/16"	20/16"	22/16"																																												
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59,5	59,1	58,8	58,2	58,0	57,8	57,5	57,0	56,5	56,0	55,6	54,0	52,5	51,3	49,8	46,5	43,5																																												
<p>GRAU DE REDUÇÃO/REDUCTION RATE</p> <table border="1"> <tr> <td>1/16"</td> <td>2/16"</td> <td>3/16"</td> <td>4/16"</td> <td>5/16"</td> <td>6/16"</td> <td>7/16"</td> <td>8/16"</td> <td>9/16"</td> <td>10/16"</td> <td>11/16"</td> <td>12/16"</td> <td>14/16"</td> <td>16/16"</td> <td>18/16"</td> <td>20/16"</td> <td>22/16"</td> </tr> <tr> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> <td>HRC</td> </tr> <tr> <td>43,3</td> <td>42,8</td> <td>42,7</td> <td>42,5</td> <td>42,0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>										1/16"	2/16"	3/16"	4/16"	5/16"	6/16"	7/16"	8/16"	9/16"	10/16"	11/16"	12/16"	14/16"	16/16"	18/16"	20/16"	22/16"	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	43,3	42,8	42,7	42,5	42,0												
1/16"	2/16"	3/16"	4/16"	5/16"	6/16"	7/16"	8/16"	9/16"	10/16"	11/16"	12/16"	14/16"	16/16"	18/16"	20/16"	22/16"																																												
HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC	HRC																																												
43,3	42,8	42,7	42,5	42,0																																																								
<p>OBSERVAÇÕES/OBSERVATIONS</p> <p>Melshop route: EAF, LF, VD, CC.</p> <p>Made in Brazil at Gerdau Charqueadas.</p> <p>Produced according to ASTM A304 and ASTM A322</p> <p>Reduction Ratio: 7,1:1</p> <p>Melted in Brazil</p> <p>Rolled in Brazil</p>																																																												
<p>ENVIRONMENTAL RECOMMENDATIONS RELATED TO PRODUCTS:</p> <p>In order to contribute with the environment and sustainable development of our productive chain, we recommend to our clients to dispose accordingly the waste related to our products, according to the environmental legislation of your region, state or country.</p>																																																												
<p>DEPARTAMENTO DA QUALIDADE / QUALITY DEPARTMENT</p> <p>BR-MT-CHARQUEADAS-APF. 20.09.2017</p> <p>ANDRÉ L. SILVA FERNANDES CREIA 0682601000</p>																																																												

Lab Services Report



10221 Capital Avenue
Oak Park MI 48237
(248)543-3578 telephone
(248)398-1434 facsimile

Bill To: Apollo Heat Treating and Processing Company, LLC

Ship To: Apollo Heat Treating and Processing Company, LLC
10400 Capital Avenue
Oak Park, MI

Attn: Randy Call
10400 Capital Avenue
Oak Park, MI

Report Date: 12/20/2017
Report ID: 17-4982
Request ID:

This report contains results for the indicated services performed on the following sample(s).

Part No	Size	Grade	HR	Shape	Work Order	Customer Sample ID	Titan Sample ID
8556	4.000	4142	HR	Round	823764	823764	17-4982-1
							Heat
						823764 JOB 3173	

Report Approved By: Steve Avery

Mechanical Testing

ASTM E8M-16a
ASTM E10-17

Sample ID	Ultimate Tensile, psi	0.2% Offset Yield, psi	Elongation - Manual, %	Reduction of Area, %	HSW Surface
17-4982-1	153,100	134,400	19	55	313

Test Comments
Mechanicals tested at Midradius



Customer Number 2007 or
Testing Laboratory

Any services within a section marked with " are not part of Titan Metallurgy's current AZLA accreditation. All testing performed by Titan Metallurgy was done at ambient (room) temperature.

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5/6



Heat Treating & Processing Company, LLC.

10400 Capital Avenue • Oak Park, Michigan 48237 • (248) 398-3434

CERTIFICATION OF HEAT TREATMENT

Date: 12 / 29 / 2017

Certification Number: 17 - 0888

Customers Order Number: 823764

Part Number: 8168 - 8556

Heat Number: 12080470

Heat Treat Job Number: 3173

Material: 4140

Quantity: 84 Pcs.

Weight: 83,449 Lbs.

Description: 4.0000" Diameter x 23' 4" Length
Per Specification: ESHT HT4140 - 42QT

Normalized	N/A	Temperature	Time at Heat	Coolant
Preheat	N/A			
Austenitized/Hardened	1575 °F	1 Hour 30 Minutes	N/A	Water
Spray Quenched	98.1 °F - 104.9 °F	2 Hours 35 Minutes	Air Cooled to Ambient	
Temper	1150 °F			
Temper	N/A			

Method of heat treat monitor, set point thermocouple (Type K). Equipment calibrated per AMS2750E. We hereby certify the above material has been treated in the manner described are correct as contained in the records of Apollo Heat Treating and Processing, LLC.

Randy L. Call

Randy L. Call

Plant Manager

Apollo Heat Treating & Processing, LLC



10400 Capital Avenue • Oak Park, Michigan 48237 • (248) 398-3434

CERTIFICATION OF HEAT TREATMENT

Date: 12 / 29 / 2017
 Certification Number: 17 - 0889
 Customers Order Number: 823764
 Part Number: 8168 - 8556
 Heat Number: 12080470
 Heat Treat Job Number: 3173

Material: 4140
 Quantity: 91 Pcs.
 Weight: 91,375 Lbs.
 Description: 4.0000" Diameter x 23' 4" Length
 Per Specification: ESHT HT4140 - 42QT

Normalized	Temperature	Time at Heat	Coolant
Preheat	N/A		
Austenitized/Hardened	1575 °F	1 Hour 30 Minutes	
Spray Quenched	98.1 °F - 104.9 °F	N/A	Water
Temper	1150 °F	2 Hours 35 Minutes	Air Cooled to Ambient
Temper	N/A		

Method of heat treat monitor, set point thermocouple (Type K). Equipment calibrated per AMS2750E. We hereby certify the above material has been treated in the manner described are correct as contained in the records of Apollo Heat Treating and Processing, LLC.

[Signature]
 Randy L. Call
 Plant Manager
 Apollo Heat Treating & Processing, LLC

6/4

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>AT</u>	SIGNED OFF BY: _____
DATE: <u>18/5/18</u>	DATE: _____

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK.				
RECORD RESULTS BELOW				
HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL				
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

Testers located in the Quality Office

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/>	
CORRECT FINISH	<input checked="" type="checkbox"/>	
CORROSION	<input checked="" type="checkbox"/>	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/>	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/>	
CORRECT THICKNESS	<input checked="" type="checkbox"/>	
PHOTO REQUIRED	<input checked="" type="checkbox"/>	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/>	
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/>	
CORRECT # ON THE MATERIAL	<input checked="" type="checkbox"/>	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/>	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/>	

use for dot tooling only td

MT 12080476 car 21442

MATERIAL CERT REC'D: <u>Yes</u>	QUANTITY RECEIVED: <u>3'</u>
QUANTITY INSPECTED: <u>3'</u>	QUANTITY REJECTED: <u>0</u>
DATE: <u>18/07/18</u>	
MATERIAL: <u>MT-44002-T-24.000</u>	
PO / BATCH NO.: <u>P00403745042920</u>	
THICKNESS ORDERED: <u>4.000"</u>	THICKNESS RECEIVED: <u>4.000"</u>
SHEET SIZE ORDERED: <u>—</u>	SHEET SIZE RECEIVED: <u>—</u>

MATERIAL RECEIPT INSPECTION FORM

[illegible][illegible][illegible]



Will to

Edison Steel Corporation
10221 Corporate Avenue

SHIP TO

Eastern Steel Corporation
c/o Apollo Heat Treat
10400 Capital Street
Oak Park, MD 49217

Oak Park, MI 48237

Customer P.T.

16912

59E 4140
ASTM A 308

25/11/17

Steel Bar, Hot Rolled, 1,0000, 25' 0"

Yield PSI	Tenacity
100	100
90	90
80	80
70	70
60	60
50	50
40	40
30	30
20	20
10	10
0	0

Tenable PSI

% Kinganition	% RNA	Bond Test
0	0	0
10	10	10
20	20	20
30	30	30
40	40	40
50	50	50
60	60	60
70	70	70
80	80	80
90	90	90
100	100	100

Standard Cost, 108-1062, 39-1

Heat number	C	Mn	P	S	Si	Cl	Hf	Co	Ni	Sn	Al	NaNO ₂	V	B	Ti	N	Ca
07658	0.41	0.89	0.013	0.020	0.23	0.25	0.089	0.047	0.159	0.011	0.003	0.023	0.028	0.0003	0.0005	28110	0.007

JOINTLY MANIPULABILITY USING ASTM A-252 CALCULATED FROM CHEMICAL DATA

Heart Number	05	06	11	12	13	14	15	16	17	18	19	210	212	214	216	218	220	224	228	23
Heart Number	05	06	11	12	13	14	15	16	17	18	19	210	212	214	216	218	220	224	228	23

SPECIAL TEST RESULTS

ASTM E-8 Method A															ASTM E-8 Method C		DUC FOR		ASTM E-288		Charpy		Reference	
Heat Number		TA	TB	TC	TD	HA	H _B	HC	HD	S	O	S	O	R	C	AC	M	REV						
717360														1	2	2								

ADDITIONAL COMMENTS

no memory, but, rather, of signs carrying material or equivalent in a suitably added in the production of the text. The text or word groups were performed on this material and this text is 100% Exact. The text is further added in the text. A. A. Model quality to the text is further added.

Reproduction or reproduction of this report, except in full, is not allowed without written approval by a representative of ALJDA that incorporates.

I hereby certify that the above facts are correct as contained in the records of ALJDA STEEN, INCORPORATED

Quincy, London: Scott Hall

256

— 2007

My controlled engine

Sent 2nd

(Necessary Pictorial)

Feat: 177569

#44919
 heat run temp variant
 P4140-14-V
 P0.12367
 49633

Eaton Steel Bar Company Inspection Certificate 1686880 EN 10204:2004-3.1

Customer	EOL	Ship Date	Customer PO	Item	Customer Item	Item Description
	222244	13-Dec-2017	E38384	11442 rev 005	506295	1 HR RD 4140/424M 24R18in SBQ QTSF P0 MST

All bundles listed below were produced using steel from Heat 177559 issued by ALTON STEEL and were completed from Eaton Steel Job 828517.

Chemistry	Description	Value	Units	Mechanical	Tensile	Value	Units
C	Carbon	0.41000	PMCT	TENSILE PSI	Tensile Strength in PSI Units	148000	PSI
Mn	Manganese	0.89000	PMCT	YIELD PSI	Yield Strength in PSI Units	138000	PSI
P	Phosphorus	0.01300	PMCT	ELONGATION	Percent Elongation	17.00	PER
S	Sulfur	0.02000	PMCT	REDUCTION	Percent Reduction in Area	52.0	PER
Si	Silicon	0.23000	PMCT	RAVEIL SURF	Gravel Surface	271.0	RHR
Ni	Nickel	0.08900	PMCT	Heat Treating	Description	Value	Units
Cr	Chromium	0.84700	PMCT	TEMPER TEMP P	Temper Temp in Fahrenheit	500 - 2500	DEGT
Mo	Molybdenum	0.15900	PMCT	AUSTEN TEMP P	Austenitizing Temp in Fahrenheit	1600 - 1700	DEGT
Al	Aluminum	0.00300	PMCT	SN TEMP P	Stress Relief Temp in Fahrenheit	500 - 2500	DEGT
Cu	Copper	0.25000	PMCT	MAGNETISM HT	Magnetism in Gauss	0 - 20	GAU
V	Vanadium	0.02800	PMCT	TIME AT TEMP	Time at Temperature	Report	PER
Co	Cobaltum	0.00300	PMCT	QUENCH MEDIA	Quench Media Requirements	CERTIFIED	PER
N	Nitrogen	0.01100	PMCT	STRESS FREE	Coil stress free	CONFORMS	PER
P+8	Element Sum Limit	0.03300	PMCT	HTX440-420T	Quench & Temper	Value	Units
DI	Ideal Diameter	4.94000	IN	HEAT PROCESSING	Description	Value	Units
Chemistry	Description	Value	Units	HEAT PROCESSING	Melted in Country	USA	PER
Macro Etch	Report macro etch results.	Value	Units	ROLLED COUNTRY	Rolling in Country	USA	PER
Geometry	Description	Value	Units	RED RATIO	Reduction Ratio	4.94	RED
Diameter	Description	0.9910 - 1.0090	IN	ASTM Standard	Grade H7	Value	Units
Joining	Description	Value	Units	A191/193M-01	Grade H7	Value	Units
J1	1/16 inch from Quenched End	56	HRC	A304-05	Carbon & Alloy Steel Bars and Quench Req	CONFORMS	PER
J2	2/16 inch from Quenched End	56	HRC	A322-13	Steel Bars, Alloy, Standard Grades	CONFORMS	PER
J3	3/16 inch from Quenched End	56	HRC	A314-30A-BC	ASTMA BC Tensile and Yield Properties	Value	Units
J4	4/16 inch from Quenched End	56	HRC	Structure	Percent Tempered Martensite	80 - 100	PER
J5	5/16 inch from Quenched End	55	HRC	PERCENT TM	Reported Microstructure	Value	Units
J6	6/16 inch from Quenched End	54	HRC	MICROSTRUCTURE	Reported Microstructure	Value	Units
J7	7/16 inch from Quenched End	52	HRC	Tag Number	2925	Value	Units
J8	8/16 inch from Quenched End	51	HRC	022-2158147	2925	Value	Units
J9	9/16 inch from Quenched End	50	HRC			Value	Units
J10	10/16 inch from Quenched End	47	HRC			Value	Units
J11	11/16 inch from Quenched End	47	HRC			Value	Units
J12	12/16 inch from Quenched End	45	HRC			Value	Units
J14	14/16 inch from Quenched End	42	HRC			Value	Units
J16	16/16 inch from Quenched End	42	HRC			Value	Units
J18	18/16 inch from Quenched End	41	HRC			Value	Units
J20	20/16 inch from Quenched End	39	HRC			Value	Units
J22	22/16 inch from Quenched End	36	HRC			Value	Units
J24	24/16 inch from Quenched End	35	HRC			Value	Units
J28	28/16 inch from Quenched End	35	HRC			Value	Units
J32	32/16 inch from Quenched End	35	HRC			Value	Units

Etchings made with Eaton Steel Identifiers reference the steel grade, heat, purchase order number when applicable, part number, product description and quantity. Material produced in accordance with Eaton Steel's Quality Manual QMS-0002 Rev 0 dated 11/21/2013.

We hereby certify the above to be in conformance, and a true copy of data represented in company records. This steel was not subject to weld repair or exposed to mechanical while in the possession of Eaton Steel.

Created on 13-Dec-2017
 Thomas Stables, Corporate Metallurgical
 10221 Capital Avenue, Oak Park, MI 48237 USA
 http://www.eatonsteel.com
 Tel: 248-388-3434
 Fax: 248-395-1434



GERDAU

Huntington Facility - Test Report
25 Commercial Road, Huntington, IN 46750
(260) 356-9200
fax (260) 356-9522

Printed: 10/26/2017 11:10 AM

Sales Order	41745	Customer Name	EATON STEEL CORPORATION
Heat Number	177659	Location	10221 CAPITAL AVE.
Size	1.0000		OAK PARK, IN 46237
Turned OD	1.0000		

Grade	4140
-------	------

Test Remarks: 1 HR RD 4140/2MM 2FT FG FG MST WD 828517 FG 11142

Approved ☒ By Westlingtel Approved Date 10/24/17

Chemistry Data	C	Mn	P	S	Si	Ni	Cr	Mg	Cu	Al	V	B	Other
Heat Number	0.410	0.890	0.013	0.020	0.230	0.086	0.847	0.159	0.250	0.003	0.028	0.0010	

QAT Hardness Test Data	Hardness Type	Min	Max	Location	Sample Location
Rc		27.8			Surface
Rc		32.2			Mid Radius
Rc		33.7			Core

QAT Tension Test Data	Sample Gauge: 5097 Dia.	Ball Number:	Yield 1	Method 1	Yield 2	Method 2	Elong %	R/A %	Gage Length	Tensile Location	PO #
148 KSI			2% Offset				17.0	52.0	2.009 G.L.	Center	

Heat Treat Data
Austenitized at 1650°F for 0.7 minutes
Tempered at 1400°F for 0.7 minutes
Induction Heating
Water Quenched

Other Test Data	Ductility	Strength	Magnesium	As Quenched	Microstructure
(Inches)	0.12575 Ft	+/- 5	(R)		

Description of Other Tests
• Produced Stress Free

We hereby certify that the reported data are correct according to German tests and those of its suppliers.

Gerdau Metall Westinghof

REV.	DESCRIPTION	ECN #	DATE	BY	APPROVED
A	NEW ISSUE	17-790	17.12.13	VM	ML

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL : AISI 4140 ROUND BAR
MINIMUM ROCKWELL C = 20 Rc
MAXIMUM ROCKWELL C = 38 Rc

SPECIFICATION: ASTM A29, AMS 6349, AMS 6382, AMS 6529

PART NUMBER: MT-4140-R-4D,DDD
WHERE "D,DDD" = DIAMETER IN INCHES
EX. 4" ROUND BAR = MT-4140-R-4.000


		TITLE AISI 4140 ROUND BAR	
PART NO. MT-4140-R		REV. A	
TOOL NO. 		INITIALS AND DATE 	
DESIGNED BY: VM 17.12.13 DRAWN BY: VM 17.12.13 CHECKED BY: VM 17.12.13 APPROVED BY: VM 17.12.13		TOLERANCES: DIMENSIONS: X ± .01 ANGLES: ± 5° SURFACES: R0.005 FINISHES:	
SCALE: 1:1 SHEET 1 OF 1		COPYRIGHT © 2013 BY PART AEROSPACE LTD	

REV.	DESCRIPTION	DATE	BY	APPROVED
A	NEW ISSUE	17.08.12	VM	VM

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL : AISI 4140 QUENCHED & TEMPERED STEEL ROUND BAR
 SPECIFICATION: ASTM 4140 QT or ASTM 4142 QT
 PART NUMBER: MT-4140QT-R [D.DDD]
 WHERE "D.DDD" = DIAMETER IN INCHES
 EG. 5/8" ROUND BAR = MT-4140QT-R0.625

EGG 17.655

 DART AEROSPACE	
TITLE AISI 4140 Q&T ROUND BAR	
DRAWING NO. MT-4140QT-R	
DESIGNED BY VM 08/14/2017	CHKD BY XX 1.01
CHECKED VM 08/14/2017	1. DIMENSIONS ARE IN INCHES ±.01
DATE APPROVED VM 08/14/2017	2. DIMENSIONS ARE IN INCHES ±.01
DATE 08/14/2017	3. DIMENSIONAL LIMITS APPLY
DATE 08/14/2017	4. DIMENSIONAL LIMITS APPLY
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DATE 08/14/2017	100. DIMENSIONAL LIMITS APPLY

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: MT-4140QT-0100 DATE: 18/02/18

QUANTITY RECEIVED: 20' QUANTITY INSPECTED: 20' QUANTITY REJECTED: 0

THICKNESS ORDERED: 1.000" THICKNESS RECEIVED: 1.000" SHEET SIZE ORDERED: — SHEET SIZE RECEIVED: —

PO / BATCH NO.: P00403745093068

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/> Y	
CORRECT FINISH	<input checked="" type="checkbox"/> Y	
CORROSION	<input checked="" type="checkbox"/> Y	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> Y	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/> Y	
CORRECT THICKNESS	<input checked="" type="checkbox"/> Y	
PHOTO REQUIRED	<input checked="" type="checkbox"/> Y	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> Y	
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> Y	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> Y	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/> Y	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/> Y	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK.				
RECORD RESULTS BELOW				
HRC	HRB	DUR A	DUR D	WEBSTER

Testers located in the Quality Office

QC 18 INSPECTION

ENGINEERING SIGNOFF (if required)

INSPECTED BY: [Signature] SIGNED OFF BY: _____

DATE: 18/02/18

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in